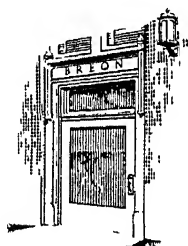


BREON

Reference to
MODERN MEDICATION



GEORGE A. BREON & CO., Inc
Manufacturing Pharmaceutical Chemists

Chief Office and Laboratories
KANSAS CITY, MO, U S A.

Branches
NEW YORK CITY ATLANTA
ST. LOUIS LOS ANGELES

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GEORGE A BREON & CO, INC

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This Book –

attempts to serve physicians who use Breon medicaments by presenting information they desire in such form that it may be quickly taken. It does not squeeze each subject dry—rather in it are practical and academic bits from many sources. The book will serve best, we believe, if it briefs the facts to essentials and conserves the time of the practicing doctor. Yet we have spoken of the background and habits of most of the preparations, tried to tell modestly of their good features and frankly of their bad, and to recall things about technic and dosage with which few memories wish to be burdened.

It is hoped the Reference Book will contribute a little to the satisfaction the physician gets from successful treatment. It may then lead to his using Breon preparations for *most* of his work, thus leaving further behind an earlier day when Breon parenteral solutions were thought of only after less efficient means had failed.

This book is designed for those interested mainly in therapeutics. A separate supplement of prices, however, is sent with it.

Catalog of Breon Medicaments

For use when the reader is concerned chiefly with costs, a Catalog of Breon Medicaments is published. In its pages therapeutic information is limited, but prices are conjoined with each preparation. The Catalog will be sent to any physician or druggist requesting it.

The Purity and Identity of Breon Pharmaceuticals Are Guaranteed

The therapeutic information which we furnish is offered wholly as a matter of convenience to physicians and is necessarily general in nature. It is expected to be applied by those skilled in medical science, including diagnosis and selection and administration of treatments, and, by those capable of modifying the indications and dosages suggested in our literature to fit conditions existing in each individual patient as determined by examination.

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THERAPEUTIC QUICK REFERENCE CHART

The chart on the succeeding pages offers the busy physician a quickly suggestive reference to treatment of disease conditions frequently met. The information is intended only as a reminder of formulae which may be applicable under certain circumstances and subject to the judgment of the physician. The Breon preparations listed are not in any case advocated as specifics. On the contrary, some are included because of a secondary, but important, benefit only.

The diagnosis having been made, the disease, if listed, is found alphabetically arranged in the first column. The medicaments suggested are shown in the second column. The third column indicates the method of administration: T (Topical), locally, O (Oral) perorally, M (Muscle) intramuscularly, S (Skin) subcutaneously, V (Vein) intravenously.

The average dosage is given in the fourth column. The general index at the rear of the book guides to pages on which additional therapeutic facts of general but practical interest may be found.

A

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Abortion, Habit Preventive	Corpus Luteum	M	2 cc every 2nd day for 1st 20 days each menstrual month
After	Pituitary Anterior	M	1 cc every 2 days
	Pituitary Posterior	M	1/5 to 2 cc as required for uterine contraction
Abscess	Lactpro	M	5 cc every 3 to 4 days
	Manganese Butyrate	M	1 cc 1st day, 1½ cc every 3 or 4 days
	Neo-Lacmanese	M	1 cc every 1 to 2 days
	Adestrin Oint	T	
	Merc-Muth	I	

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Acidity (of stomach)	Bismagal	O	1 teaspoonful in $\frac{1}{2}$ glass water after meals
	Bismudin	O	1 tablespoonful 3 times a day before meals
	Calcium Carbonate	O	1 tablet every 3 hours
Acidosis	Dextrose 50%	V	Initial dose 3, 50 cc ampules Dextrose 50% (75 Gms) diluted
Toxemia of pregnancy	Bismagal	O	1 teasp in $\frac{1}{2}$ glass water after meals
Acne vulgaris	Neo-Lacmanese	M	1 cc every 2 to 3 days
	Manganese Butyrate	M	1 cc 1st day, $1\frac{1}{2}$ cc every 3 to 4 days
	Ovarian Whole	M	1 cc every 2 to 3 days
Addison's Disease	Adrenal Cortex	M	Not generally available in stable form
	Sodium Chloride	O	2 to 10 Gms daily
	Glycocoll	O	1 to 2.5 Gms daily
Albuminuria	Formide "B"	V	20 cc daily
	Methenamine-Atropine Comp	O	4 to 6 tablets t 1 d
	Methenamine	O	10 to 15 grs t 1 d
	Methena-Phos	O	1 every 2 to 3 hours
	Methenamine	V	7 grs, repeat in 12 to 24 hours, later 15 to 31 grs
	Ammonium Chloride	O	3 or 4 tablets, 3 or 4 times a day
Amenorrhea	Pituitary Anterior	M	1 cc every 2 to 3 days
	Pituitary Anterior-Ovarian	M	2 cc every 2 to 3 days
	Ovarian Whole	M	1 cc every 2 to 3 days
	Ovarian Residue	M	1 cc every 2 days, recess during menstruation
for resultant anemia	Liron	O	4 caplets 3 times a day
	Ferro-Aisen	V	5 to 10 cc 3 times a week

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Anaphylactic Reactions	Calcium Gluconate	V	10 to 20 cc daily until symptoms disappear
	Epinephrine	V	½ to 1 cc
	Epinephrine-Ephedrine	M	1 cc repeated in a few minutes
	Caffeine Sodium Benzoate	M	½ to 1 cc as required
to prevent	Ephedrine Caplets	O	¾ gr every 2 to 4 hours
Anemia, Hyperchromic	Liver Extract	M	Cases in remission, extractives 100 to 200 Gms, for maintenance, extractives 100 Gms weekly
Hypochromic (Secondary)	Ferro-Arsen	V	5 to 10 cc every 2 to 3 days
	Iron & Aisenic	M	2 cc every 2 to 3 days
	Iron Citrate-Nuclein	M	1 cc every 2 days
	Cacodylates-Strychnine	M-S	1 cc every 2 to 4 days
	Sod Cacodylate	M-S	2 to 7 grs every 1 to 4 days
	Sod Cacodylate	V	Initial dose 3 grs 5 cc, increase slowly to 7 grs to effect
	Liver Extract	M	Extractives of 100 Gms every 5 to 7 days
	Luon	O	4 caplets 3 times a day
	Iron, Ars & Cal	O	1 to 5 tablets t i d
	Blaud	O	1 to 3 tablets t i d
	Thyroid	O	¼ to ½ gr twice a day
Anesthesia, Local	Procaine HCl	S-M	Varied
	Procaine with Epinephrine	S-M	Varied
	Quinine & Urea, 1%	S	1 or 5 cc as required
	Quinine & Urea	M	7½-15 grs as required

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Arachnidism	Calcium Gluconate	V-M	10 to 20 cc, 10% repeated
	Dextrose	V	50 cc, 50% repeated
	Calcium Glucosan	V	5 to 20 cc, repeated
	Magnesium Sulfate	V	20 cc 10%, repeat as required
Arthritis	Neo-Lacmanese	M	1 cc daily, then every 2d day, later twice weekly
	Neo-Lactpro	M	1 to 2 cc 3 to 5 days
	Vitamin A & D Conc	M	1 cc every 2 to 3 days
	Cincosal	V	20 cc every 2 to 3 days
	Salsodide	V	10 to 20 cc every 2 days
	Sodium Iodide	V	10 to 20 cc daily, then every 2 to 4 days
	Sodium Salicylate	V	10 to 20 cc every 2 days
	Acetyl Sal Acid	O	5 grs every 4 hours
	Cinc Iobenz	O	1 tablet 3 times a day
	Colphysal	O	2 caplets every 3 hours for 4 doses, then 1 With water
Asthenia (neuro-circulatory)	Glycocoll	O	180 to 360 grs daily
	Orchic Extract	M-S	1 cc every 2 days
	Ovarian Extract	M-S	1 cc every 2 to 3 days
	Thyroid	O	$\frac{1}{2}$ to 1 gr 3 times a day
Asthma, bronchial	Epinephrine	S	0.5 to 1 cc
	Epinephrine-Ephedrine	S	1 cc as required
	Calcium Glucosan	V	10 cc, increased to 30 cc, every 3 or 4 days
	Calcium Gluconate	M	10 to 20 cc, 10%, daily
	Vitamin A & D Conc	M	1 cc 3 times weekly
	Sodium Iodide	V	20 cc every 2 to 4 days
	Neo-Lacmanese	M	$\frac{1}{2}$ to 1 cc, 2-3 times a wk

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Asthma, bronchial			
<i>Continued</i>			
to prevent paroxysms	Lobiodrin	O	1 or 2 before expected attacks
	Lobiodo	O	1 or 2 before expected attacks
	Ephedrine	S	1 cc
	Ephedrine	O	1 caplet every 4 hours
bacterial-sensitive cases	Neo-Guisodide	V	20 cc every 2 to 4 days
Athlete's foot (see Dermatophytosis)			

B

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Bilharziasis (Schistosomiasis)	Antimony and Pot Tartrate	V	1 cc, 1% increased by 1 cc each 2d day to 10 to 12 cc
Biliousness	Cholo Glyco	O	3 tablets 2 hrs after meals
Boils	Salibenz Oint	T	
	Adestin Oint	T	
	Neo-Lacmanese	M	1 cc every 1 to 2 days
	Manganese Butyrate	M	1 cc to 2 cc 3 to 4 days
	Vitamin A & D Conc	M	1 cc 3 times weekly
Bronchiectasis	Eucalyptol-Quinine	M	2 cc 2 or 3 times weekly
	Neo-Guisodide	V	20 cc every 1 to 3 days
	Gui-Calcium	V	10 cc 1st 2 injections, then 20 cc daily
	Ferro-Gui-Arsen	V	10 cc every 3 or 4 days
when mucus is very thick	Formodide "B"	V	20 cc daily, then twice weekly, recess every 3d week

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Bronchitis	Neo-Guisodide	V	20 cc daily, then every 2 to 4 days
	Eucalyptol-Quinine	M	2 cc 2 to 3 times a week
	Gui-Calcium	V	10 cc 1st 2 injections, then 20 cc daily
	Ferro-Gui-Arsen	V	10 cc every 2 to 4 days
	Lobiodo	O	1 to 2 every 4 hours
	Lobiodrin	O	1 to 2 every 4 hours
	Vit A & D Conc	M	1 cc 3 times weekly
	as stimulant Caffeine w Sod Benzoate	M	1 to 1 cc as required
Bronchopneumonia see Pneumonia, bronchial			
Burns	Dextrose	V	100 to 200 cc as required
	Adestan Oint	T	
	Tanurool Oint	T	
	Benzolin Oint	T	

C

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Cachexia, see Anemia, hypo- chromic			
Carbuncle	Neo-Lacmanesc	M	1 cc 2 or 3 times a week
	Lactpro	M	2 to 5 cc 3 times a week
	Saliben	T	For early stage
	Uicajel	T	
Cardiovascular Collapse	Caffeine w Sod Benzoate	M	1 cc repeated if required
	Camphor in Oil	M	1 cc every 2 to 3 hours
	Epinephrine	M	1 cc repeated if required
		V	3 to 5 mins
	Digitalis-Nitro Co	O	1 every hour or half hour

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Chancroid	Chancrol Sol & Oint	T	
	Merc Muth	T	
	Antimony & Potassium Tartrate	V	1 cc, 1% solution increased 1 cc each 2d day until 10 cc as one dose
Chlorosis, see Anemia, hypochromic			
Cholecystitis, chronic	Cholo Glyco	O	2 before meals
	Bile Salts-Cascara	O	1 before meals
	Dextrose 50%	V	3, 50 cc ampules, subsequent doses 2, 50 cc ampules, diluted
	Calcium Gluconate	V-M	10 cc every 1 to 3 days
	Calcium Glucosan	V	10 to 20 cc, 1 to 3 days
Clonorchiosis	Antimony & Potassium Tartrate	V	1 cc, 1% increased 1 cc each dose, given every 2d day until 10 to 12 cc are given at a dose
Colds	Acet-alac-qum	O	1 every 2 hours for 4 doses, then 1, 4 times a day
	Amonidrin	O	1 tablet 4 times a day
	Neo-Guisodide	V	10 to 20 cc, 1 to 4 days
	Fucalypsol-Quinine	M	2 cc twice weekly
	Vit A & D Conc	M	1 cc, 3 times a week
for decongestion	Ephedrine Comp Jelly	T	
Colic, lead, see Poisoning, lead			
Colitis, chronic ulcerative	Calcium Gluconate	O	4 Gms 3 or 4 times a day 4 hours after meals
	Neo-Lacmanese	M	1 cc every 2 to 3 days
	Cholo Glyco	O	2 before meals

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Constipation	Karabim	O	1 to 2 tsps morning and evening
	Casc Sag Ext	O	1 at bedtime as needed
	Cholo Glyco	O	2 after meals
	Phenosul	O	1 at bedtime as needed
Coughs due to minor chest irritations	Bellamphor	O	1 to 1½ tsps every 4 hrs
	Gwia-Lyptus	O	1 to 2 tsps every 3 hours
	Calcium Creosote	O	2 or 3, 3 times a day
	Fucalypsol-Quinine	M	2 cc every 1 to 2 days
Cryptorchidism, see Undescended Testicles			
Cystitis	Formodide "B	V	20 cc every 2 days Push fluids
	Methenamine	V	7 to 31 grs Push fluids
	Methenamine-Salicylate Cpd	V	10 cc 1st injection, then 20 cc daily
	Meth-atro-mine	O	2 or 3, 3 times a day

D

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Dental Caries	Vit A & D Conc	M	1 cc twice weekly
	Iron, Ars & Cal	O	1 tablet 3 times a day
Dermatitis			
Arsenical	Sod Thiosulfate	V	10 cc every 6 to 10 days
Idiopathic	Sod Cacodylate	V	3 to 7 grs every 2 or 3 days
Herpetiform Rhus	Strontium Bromide	V	10 cc every 2 days
	Epinephrine-phedrine	M	0.5 to 1 cc as required, if severe

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Dermatophytosis (athlete's foot)	Benoxal	T	
Diabetes Insipidus	Pituitary Posterior	M	$\frac{1}{2}$ to 1 cc, 1 to 4 times a day
	Thyroid Extract	O	$\frac{1}{4}$ to 1 gr t i d
Diabetes Mellitus	Insulin	M	1 U ea 3 Gms dextrose present in 24 hour urine
	Manganese Dioxide	O	1 t i d after meals with glass water (experimental)
	Calcium Glucosan	V	20 cc once or twice daily
	Calcium Gluconate	V-M	10 cc daily
Diarrhea	Pomfrax	O	10 tsps in fluid fed over 24 hours
for dehydration	Dextrose	V	Sufficient to improve body fluids
as emergency measure	Epinephrine-Ephed	M	$\frac{1}{2}$ to 1 cc as required
	Ephedrine	M	$\frac{1}{2}$ to 1 cc as required
Diuretic	Ammonium Chloride	O	5 grs 3 or 4 times a day
	Citrate	O	1 tbsp 3 or 4 times a day
	Dextrose	V	1st dose 3, 50 cc ampules, then 2, 50 cc ampules, diluted
Dysentery, Amebic	Emetine HCl	M	1 gr daily, 7 to 12 doses, recess for month
Dysmenorrhea	Hyolin	O	2, day before pain, then 1 every 4 to 6 hours for 2 days
	Thyroid	O	$\frac{1}{4}$ to $\frac{1}{2}$ gr 3 times a day
	Ovarian Whole	M	1 cc every 2 to 3 days
	Pituitary Anterior	M	1 cc every 2d day
	Pituitary Anterior-Ovarian	M	2 cc daily to twice weekly
	Corpus Luteum	M	1 cc every 2d day 10 days before menses
	Vit A & D Conc	M	1 cc weekly

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Dyspnoea	Epinephrine	M	$\frac{1}{2}$ to 1 cc as required
	Ephedrine	M	1 cc
	Caffeine w Sod Benzate	M	1 to 2 cc repeated in $\frac{1}{2}$ hour if required

E

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
E clampsia for convulsions	Dextrose, 50%	V	1st dose 3, 50 ampules Dextrose 50% (75 Gms) diluted Then 2, 50 cc ampules (50 Gms)
	Magnesium Sulfate	V	20 cc of 10% solution
	Calcium Glucosan	V	10 to 20 cc repeated in 4 to 8 hours
Eczema	Strontium Bromide	V	10 cc every 2 days
	Sod Thiosulfate	V	10 cc daily, 4 to 10 doses
	Spleen Extract	M	2 cc daily for 7 doses, then extend interval
	Vit A & D Conc	M	1 cc weekly
	Neo-Lacmanese	M	1 cc once weekly
	Adestrin	T	
	Sulfic Jelly	T	
	Resorbenz	T	
see also Anemia, Hypochromic			
Edema, Cerebral	Dextrose	V	1st dose 3, 50 cc ampules, then 2, 50 cc ampules, diluted
	Magnesium Sulfate	V	10 cc every 4 hours 6 to 8 doses
Inflammatory	Calcium Glucosan	V	30 cc every 3 to 4 days
	Calcium Gluconate	V-M	10 cc every 3 to 4 days

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Epilepsy	Neo-Guisodide	V	10 to 20 cc every day or 2
	Sodium Iodide	V	20 cc daily
	Caffeine w Sod Benzoate	M	1 cc as required
Endocarditis when due to streptococci	Sodium Iodide	V	10 to 20 cc every day or 2
	Caffeine w Sod Benzoate	M	$\frac{1}{2}$ to 1 cc as required
	Salsodide	V	10 to 20 cc every 1 to 3 days
	Salsocol	V	1st injection, 10 cc, then 20 cc every 1 to 4 days
Enuresis	Pituitary Posterior	M	$\frac{1}{2}$ to 1 cc (obster strength) 1 to 4 times daily
	Thyroid	O	$\frac{1}{2}$ to 1 gr daily
	Ephedrine HCl	O	$\frac{3}{8}$ gr at bedtime
	Methenamine-Atropine Cpd	O	2 or 3 tablets, 3 times daily
Epididymitis	Calcium Glucosan	V	10 cc, then 30 cc daily for 3 or 4 doses
	Calcium Gluconate	V-M	10 cc daily 3 or 4 days, then twice weekly for a month
	Neo-Lacmanese	M	1 cc every 1 to 3 days
	Sodium Iodide	V	20 cc daily
Epilepsy for status epilepticus for postconvulsive stupor	Strontium Bromide	V	1st injection, 3 cc, then 10 cc every 2d day
	Magnesium Sulfate	V	25 cc, repeat
	Phenobarbital	O	1 to 1½ grs t i d, reduced to $\frac{1}{2}$ gr daily
	Caffeine w Sodium Benzoate	M	$\frac{1}{2}$ to 1 cc as needed

F

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Flatulence	Karabim	O	1 to 2 tsps morning and evening with glass of water for each tsp
	Bismagal	O	1 tsp in $\frac{1}{2}$ glass water after meals
Furunculosis, see Boils			

G

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVALS
Gonorrhea	Neo-Lacmanese	M	Acute, 1 cc daily, chronic 1 cc every 1 to 3 days
	Neo-Lactpro	M	1 cc, then 2 cc every 3 to 4 days
	Formodide 'B'	V	20 cc every 2 days Force fluids
	Manganese Butyrate	M	1 cc first day of discharge, 1 5 cc 5th day
	Mercurochrome, 1%	V	1st day 12 cc, 3d day 15 cc, 6th day 18 cc, 10th day 20 cc
for gonorrheal vaginitis	Ovarian Residue	M	1 cc twice weekly, with dose increased until cornification of epithelium
for gonorrheal rheumatism	Salsodide	V	1st dose 10 cc, then 20 cc daily
Gout	Cincosal	V	20 cc, 2 to 3 days
	Salsocol	V	1st dose, 5 to 10 cc, then 20 cc, 1 to 4 days
	Sod Iodide, Salicyl & Colchicine	V	20 cc every 1 to 4 days
	Colphysal	O	2 every 3 hours for 4 doses, then 1 every 3 hrs
Granuloma Inguinale	Antimony & Potassium Tartrate	V	1st dose 1 cc, 1%, increased 1 cc each 2d day to 10 to 12 cc at one dose

H

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Hav Fever	Ephedrine	S-M	1 cc as required
	Epinephrine	S-M	5 to 12 min as required
	Lobiodrin	O	1 every 4 hours
	Ephedrine Solution	T	(as a spray)
	Ephedrine Jelly	T	
	Calcium Glucosan	V	1st injection 10 cc, then 20 cc every 2d day
	Calcium Gluconate	V-M	10 cc every 2d day

Heart, see Cardiovascular			
Hematemesis	Calcium Glucosan	V	10 cc every 1 to 3 days
	Epinephrine-Ephedrine	M	1/4 to 1 cc as required
	Dextrose 50%	V	1st dose 3, 50 cc ampules, then 2, 50 cc ampules, diluted
Hemoptysis	Calcium Glucosan	V	10 to 30 cc every 4 to 12 hours
	Calcium Gluconate	V	10 cc every 4 to 12 hours
	Pituitary Posterior	M	1 cc as required (raises systemic and lowers pulmonary circulation pressure)
	Dextrose 50%	V	1st dose 3, 50 cc ampules, then 2, 50 cc ampules, diluted
Hemorrhage	Calcium Glucosan	V	10 to 30 cc every 4 to 12 hours
	Emetine HCl	M	1/2 to 1 gr as required
	Dextrose	V	300 to 500 cc 10% sol
	Pituitary Post	M	1/2 to 1 cc as required

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Hemorrhoids	Quinine & Urea 5%		To obliterate 1 to 4 cc 5 to 7 days
to relieve constipation	Lanulol	T	
	Karabim	O	1 to 2 tsps morning and evening with 1 glass water for each tsp
Herpes Zoster	Merc Muth	T	
	Resorbenz	T	
	Methenamine	V	30 grs daily, 2 to 4 days
	Pituitary Post	M	$\frac{1}{2}$ to 1 cc daily, 4 to 6 days
	Strontium Bromide	V	10 cc every 2 days
	Methenamine- Salicylate	V	1st injection 10 cc, then 20 cc daily
Hypertension	Magnesium Sulfate	V	10 cc 10% solution daily
	Sodium Iodide	V	10 to 20 cc 1 to 3 days
	Nitricholate	O	2 tablets at night

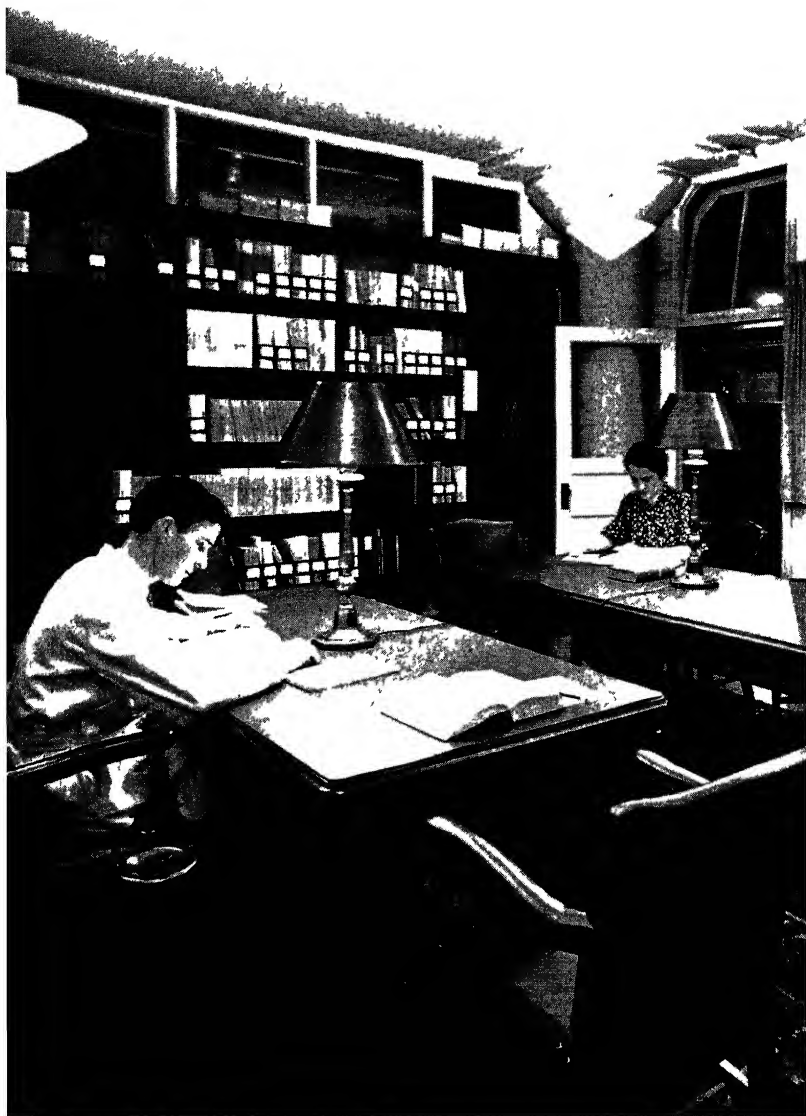
I

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Impotence	Orchic Extract	M-S	1 cc every 2 days
	Pituitary Anterior	M-S	1 cc every 1 or 2 days
	Orchic Extract	M	1 cc every other day
	Strychnine Sulfate	O	1/60 gr t i d
	Yohimone	O	1, 3 to 4 times a day
Infections			
General (severe)	Mercurochrome	V	20 cc of 1% solution
Localized	Neo-Lacmanese	M	Acute, 1 cc daily, chronic, 1 cc, 1 to 3 days
	Lactpro	M	5 to 10 cc, 3 to 5 days
Purulent, local	Manganese Butyrate	M	1 cc 1st day, $1\frac{1}{2}$ cc, 3 or 4 days

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Influenza for attendant streptococcus infection	Acetyl Sal Acid	O	1 every 3 or 4 hours
	Epinephrine- Ephedrine	M	1 cc as required
	Salsodide	V	1st dose 10 cc, then 20 cc daily
Insomnia	Acetyl Sal Acid	O	1 or 2 as required
	Amobar	O	1 or 2 as required
Intestinal fermenta- tion	Bismudin	O	1 tbsp before meals
	Cholo Glyco	O	2 before meals
	Dilute HCl		15 drops after meals
Iritis from hyperten- sion	Neo-Lacmanese	M	1 cc daily
	Sodium Iodide	V	20 cc daily
	Salsodide	V	10 to 20 cc, 2 to 3 days
	Specific treatment		See Syphilis
	Magnesium Sulfate	V	10 cc 10% daily

J

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Jaundice	Cholo Glyco	O	2 before meals
Pre-operative	Calcium Glucosan	V	10 cc daily for 3 days
	Calcium Gluconate	V-M	5 cc daily for 3 days
	Dextrose 50%	V	100 cc daily for 3 days, diluted



A MEDICAL AND TECHNICAL LIBRARY IS MAINTAINED WITHIN THE
BREON LABORATORIES

K

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Keratitis	Vit A & D Conc	M	1 cc weekly
	Ferro-Arsen	V	5 cc 2 or 3 days
Ketosis	Insulin	M	As required
	Bismudin	O	1 tbsp before meals
	Bismagal	O	1 tsp in water after meals
	Biscarbonal	O	2 tablets before meals

L

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Labor	Pituitary Posterior	M	3 to 15 mins Begin with small amount and increase as needed
	Pituitary-Thymus	M	½ cc after labor has definitely begun
Lactation, to inhibit	Camphor in Oil	M	3 grs twice the 1st day, then 1 gr daily for 3 days
Laryngitis	Sodium Iodide	V	10 to 20 cc daily
Lead poisoning, see Poisoning, Lead			
Leishmaniasis	Antimony & Potassium Tartrate	V	5 to 10 cc 1% daily, 6 to 18 doses
Lumbago	Cincosal	V	20 cc, 2 to 4 days
	Salsodide	V	10 to 20 cc, 1 to 2 days
	Sodium Salicylate	O	Enteric coated, 5 to 10 grs t i d
	Solmiment	T	

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
I upus	Sodium Cacodylate	V	1st dose 3 grs, increased to 7 grs
	Vit A & D Conc	M	1 cc weekly
	Iron & Arsenic	M	2 cc every 2 or 3 days
	Calcium Gluconate	V-M	10 cc every 2 or 3 days
	Ferro Arsen	V	5 to 10 cc, 2 to 3 days
	Adestrin	T	

M

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Malaria	Qui-Arsenate	V	5 cc, then 22 cc 30 to 60 minutes before expected paroxysm
	Quinine Dihydrochloride	V	10 to 20 cc an hour before expected paroxysm
	Quinine Dihydrochloride	M-S	1 cc every 4 hours until temperature drops
chronic	Sodium Cacodylate	V	3 grs, increasing to 7 grs
Menopause, Disturbances	Ovarian, Whole	M-S	1 cc every 2 or 3 days
	Ovarian Residue	M-S	1 cc every 1 to 4 days
	Pituitary Anterior-Ovarian	M	2 cc every 2 to 4 days
	Pituitary Anterior	M	1 cc every 2 to 3 days
	Corpus Luteum	M	1 cc 2 or 3 times a week
	Thyroid	O	¼ to 1 gr t i d before meals
Menorrhagia	Pituitary Anterior	M	1 cc daily, commencing week before period, continue until bleeding stops Repeat several months
	Corpus Luteum	M	1 cc, 3 or 4 times a week

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Menorrhagia <i>Continued</i> for checking hemorrhage	Epinephrine- Ephedrine	M	$\frac{1}{2}$ to 1 cc as required
	Calcium Glucosan	V	10 to 20 cc daily
	Calcium Gluconate	V-M	5 to 10 cc daily
Malgia	Salsodide	V	10 to 20 cc daily
	Salsocol	V	10 to 20 cc, 1 to 4 days
	Soliniment	T	
	Acetyl Sal Acid	O	1 every 3 to 4 hours
Myasthenia Gravis	Glycocoll	O	50 to 150 grs t i d
	Ephedrine Caplets	O	$\frac{1}{8}$ increased to $\frac{3}{4}$ grs as required
	Calcium Gluconate	V-M	5 to 10 cc daily
	Calcium Glucosan	V	10 to 20 cc daily
	Ovarian Whole	M	1 cc every 2 to 3 days

N

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Nausea of Pregnancy	Corpus Luteum	M	1 cc twice a day to twice a week
	Ovarian, Whole	M	1 cc daily to twice weekly
	Dextrose	V	50 cc to 150 cc 50%, diluted
	Vitamin B ₁	M	1 cc several times daily at first
		O	4, t i d
Nephritis	Formodide "B"	V	20 cc every 2 to 3 days Except when red blood cells in urine
	Sodium Iodide	V	10 to 20 cc, 1 to 3 days
	Calcium Glucosan	V	20 cc once or twice daily
	Calcium Gluconate	V-M	10 cc daily
for anuria	Dextrose	V	1st dose 3, 50 cc ampules, then 2, 50 cc ampules, diluted

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Neuralgias	Salsodide	V	10 to 20 cc, 1 to 3 days
	Cincosal	V	20 cc every 2 or 3 days
	Sodium Cacodylate	M	2 to 7 grs, 1 to 4 days
	Sodium Salicylate	V	10 to 20 cc, 1 or 2 days
	Amobar	O	1 or 2 tablets
	Acetyl Sal Acid	O	10 grs 3 times daily
Neurasthenia	Cacodylates-Strychnine Comp	M	1 cc every 2 to 4 days
	Orchic Extract	M-S	1 cc every 2 days
	Ovarian, Whole	M-S	1 cc every 2 or 3 days
	Pituitary Anterior	M	1 cc every 2 days
	Thyroid	O	¼ to 1 gr t i d
Neuritis	Cincosal	V	20 cc, 2 or 3 days
	Salsodide	V	10 to 20 cc, 1 or 2 days
	Sodium Iodide	V	10 to 20 cc, 1 or 2 days
	Aminopyrine	O	5 to 8 grs

O

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Obesity	Thytocin	O	1 after meals and at bed-time
	Thyroid	O	¼ to 1 gr 3 times a day
	Pituitary Anterior	M	2 cc daily

P

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Paralysis Agitans	Calcium Chloride	V	5 to 10 cc, 1 to 4 days
	Calcium Gluconate	V-M	5 to 10 cc, 1 to 4 days
	Calcium Glucosan	V	10 to 20 cc, 1 to 4 days

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Pemphigus	Quinine Dihydrochloride	V	3¼ to 7½ grs daily
	Strontium Bromide	V	1st dose, 5 cc, then 10 cc every 2 days
	Sodium Cacodylate	V	3 to 5 grs every 2 to 6 days
	Merc Muth	T	
	Sulfic Jelly	T	
	Ferro-Arsen	V	5 cc every 2 or 3 days
	Neo-Lacmanese	M	1 cc weekly
	Vit A & D Conc	M	1 cc weekly
	I Q & S Arsenates	O	1, 3 times a day
	Mercurochrome	V	Not over 2 mg per Kg
Pericarditis	Sodium Salicylate	O	1 every 3 to 4 hours
	Digitalis-Nitro	O	1 every ½ to 1 hour
	Caffeine w Sod Benzoate	M	2 cc as required
as tissue builder	Ferro-Arsen	V	5 cc every 2 to 4 days
Peristalsis, Intestinal	Pituitary Posterior	M	½ to 2 cc
Pertussis	Potassium Iodide	O	2 grs
	Iobiodin	O	1 every 6 hours
	Iobiodo	O	1 every 4 to 6 hours
	Iron, Ars & Cal	O	1, 3 times a day
as tonic	Vit A & D Conc	M	1 cc weekly
Pharyngitis	Salsodide	V	10 to 20 cc, 1 to 3 days
	Sodium Iodide	V	10 to 20 cc, 1 or 2 days
	Ephedrine Sol	T	
	Sodium Salicylate	O	1 every 3 or 4 hours

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Pleurisy (non-tubercular) for sero-fibrinous type convalescence	Sodium Iodide	V	10 to 20 cc, 1 or 2 days
	Acetyl Sal Acid	O	1 every 2 or 4 hours
	Calcium Glucosan	V	30 cc every 3 or 4 days
	Calcium Gluconate	V-M	10 cc every 3 or 4 days
	Blaud's	O	1 or 2, 3 times a day
	I, Q, & S Arsenates	O	1, 3 times a day
	Ferro-Arsen	V	5 cc every 2 to 4 days
	Vit A & D Conc	M	1 cc weekly
Pneumonia, Bronchial	Eucalyptol-Quinine	M	2 cc once or twice daily, then every 2 to 3 days
	Neo-Guisodide	V	1st dose 10 cc, then 20 cc
	Caffeine w Sodium Benzoate	M	7¼ grs 1 to 3 times daily
	Neo-Lacmanese	M	1 cc every 1 to 3 days
	Gul-Calcium	V	1st dose 10 cc, then 20 cc
	Ferro-Gul-Arsen	V	10 cc every 3 or 4 days
	Acetyl Sal Acid	O	5 to 10 grs, 3 or 4 hours
	for cough	Amonidrin	O 1 or 2 t. i d
	for dyspnea	Lobiodrin	O 1 every 4 hours
Pneumonia, Lobar	Quinine Dihydrochloride	V	10 grs in 20 cc every 3 hours until temperature remains below 102°
	for nutrition of heart	Dextrose, 25%	V 20 cc every 1 or 2 hours
	for heart or res- piratory failure	Camphor in Oil	M 3 grs every 2 hours
	for emergency circulatory stimulation	Epinephrine- Ephedrine	M ½ to 1 cc every 20 minutes for 6 doses
	to maintain sys- tolic pressure	Pituitary Posterior	M 1 cc every 3 hours or as needed

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Pneumonia, Lobar			
<i>Continued</i>			
as vasomotor stimulant	Strychnine Sulfate	O	1/30 to 1/10 gr every 6 hours
for circulatory failure	Caffeine w Sodium Benzoate	M	7¼ grs in 2 cc, 1 to 3 times daily
Poisoning, Arsenic			
	Sodium Thiosulfate	V	10 cc daily for 4 to 10 doses
as diuretic	Citrace	O	1 tbs 3 or 4 times daily
supportive	Strychnine Sulfate	O	1/60 gr 3 times a day
	Caffeine w Sodium Benzoate	M	½ to 1 cc as needed
	Camphor in Oil	M	1 to 2 cc every 2 to 4 hrs
Poisoning, Lead			
	Calcium Glucosan	V	10 to 20 cc daily
	Calcium Gluconate	V-M	5 to 10 cc daily
	Sodium Iodide	V	1 to 3, 20 cc injections 1st day Then 20 cc daily
	Vit A & D Conc	M	1 to 2 cc
Pregnancy, see			
Abortion			
Eclampsia			
Labor			
Nausea			
Puerperal Fever			
Prostatitis			
	Formidide "B"	V	20 cc daily Push fluids
	Methenamine	V	7 to 15 grs every 1 to 2 days
	Sodium Iodide	V	20 cc every 1 or 2 days
	Prostate-Orchic	M	1 cc every 2d day, with intervals lengthened
in subacute and chronic types	Neo-Lacmanesc	M	1 cc every 2 or 3 days

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Pruritis	Pituitary Anterior-Ovarian	M	2 cc every 2d day
	Tanurool	T	
	Strontium Bromide	V	5 to 10 cc every 2d day
	Benzolin	T	
Psoriasis, Vulgaris	Salsodide	V	10 to 20 cc, 1 or 2 days
	Sod Salicylate	V	10 to 20 cc, 1 or 2 days
	Spleen Extract	M	2 cc daily, then at lengthened intervals
	Sodium Cacodylate	M	1 cc (1 to 3 grs) daily
	Neo-I acmanesc	M	1 cc 1 to 3 times a week
	Salibenz	I	
Puerperal Fever	Neo-Lacmanesc	M	1 cc every 1 or 2 days
	Salsodide	V	10 to 20 cc daily
	Sulfanilamide	M	Initially 20 cc every 4 hours for 24 hours followed by tablets
		O	Initially about 90 grs, with 20 to 30 grs every 6 hours
Pyelitis	Formodide "B"	V	20 cc every 1 or 2 days
	Methenamine	V	7 grs increasing to 15 grs every 1 or 2 days
	Methenamine-Salicylate	V	10 to 20 cc daily
	Methenamine Comp	O	1 t i d with copious water

R

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Rheumatic Fever	Salsocol	V	10 to 20 cc every 1 or 2 days

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Rheumatic Fever, <i>Continued</i>	Salsodide	V	10 to 20 cc every 1 or 2 days
	Sodium Salicylate	V	10 to 20 cc every 1 or 2 days
	Sodium Salicylate & Sodium Iodide	V	10 to 20 cc daily
	Cincosal	V	20 cc every 2 or 3 days
	Sodium Salicylate	O	2 or 3 every hour for 8 or 10 doses Rest 12 to 24 hours, then 1 or 2 every hour
	Methenamine-Salicylate	V	10 to 20 cc daily
	Soliment	T	
	Neo-Lacmanese	M	1 cc every 1 or 2 days
	Colphysal	O	2 every 3 hours for 4 doses, then 1 every 3 hrs
Rhinitis, see Colds			

S

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Scabies for dermatitis	Calcium Sulfur	T	
	Sulfic Jelly	T	
	Adestrin	T	
Sciatic	Cincosal	V	20 cc every 2 or 3 days
	Salsodide	V	10 to 20 cc daily
	Sodium Iodide	V	20 cc daily for 10 days
	Acetyl Sal Acid	O	5 grs every 3 hours
	Aminopyrine	O	5 grs every 3 or 4 hours
Serum Sickness, see Anaphylaxis			

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Shock	Dextrose 50%	V	25 cc
	Camphor in Oil	M	3 grs every 15 to 30 mins
	Pituitary Posterior	M	$\frac{1}{2}$ to 1 cc
	Epinephrine	M	0.5 to 1 cc 1:1000 solution
		V	1:10,000 solution infused very slowly
extreme emergency		In heart	1 to 0.5 cc of 1:1000 solution
Sinusitis	Cincosal	V	20 cc every 2 to 4 days
	Neo-Lacmanese	M	1 cc every 2 to 3 days
Spasmophilia	Calcium Glucosan	M	In adult, 10 cc, 10% daily In children, in prop to age
Spider Bites, see Arachnidism			
Sterility	Ovarian Whole	M-S	1 cc every 2 or 3 days
	Pituitary Anterior-Ovarian	M	2 cc every 2 to 4 days
	Thyroid	O	$\frac{1}{2}$ to 1 gr t i d
Streptococcal Hemolyticus Infections	Sulfanilamide	M	Initially 20 cc every 4 hours for 24 hours with 10 grs by mouth every 6 hours
severe		O	Initially about 90 grs with 20 to 30 grs every 6 hours
moderately severe		O	Initially about 90 grs with 20 to 30 grs every 6 hours
mild		O	15 to 20 grs every 4 hours, then every 6 hours
Syphilis	Brecen Bismuth Emulsion	M	1 cc, 8 to 10 days, for 15 injections

INDICATION	MEDICAMENT	ROUTE	MEDICAMENT	ROUTE
<i>Syphilis—Cont</i>				
	Pot -Sod Bismuth Tartrate	M	1 to 2 cc every 5 to 7 days Course consists of 25 to 3 Gms After 6 weeks 2nd course	
	Sacbumuth	M	1 cc every 2nd day for 30 doses	
	Colloidal Mercury Sulfide	M	1 to 2 cc every 3 or 4 days	

T

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Tetanus for convulsions	Antitoxin	M	
	Magnesium Sulfate 10%	V	20 cc as required
Tetany	Calcium Gluconate	V-M	10 cc 10% V and 10 cc M several times a day
	Calcium Glucosan	V	5 to 10 cc, increased to 30 cc
	Vit A & D Conc	M	1 cc weekly
	Magnesium Sulfate	M	0.2 Gm per Kg daily
	Calcium Lactate	O	1, 3 to 4 times a day
Transfusion, Blood	Sodium Citrate 2½ %		50 cc to each 450 cc blood
French Mouth, see Vincent's Angina			
Tuberculosis	Calcium Glucosan	V	10 cc, 2d day 20 cc, then 30 cc every 2 or 3 days for 12 to 24 doses
	Gui-Calcium	V	10 cc for 1 or 2 days, then 20 cc daily for at least 30 doses

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Tuberculosis, <i>Cont</i>	Ferro-Gui-Aisen	V	10 cc every 3 or 4 days
	Calcium Gluconate	V-M	1st dose 5 cc, then 10 cc daily for 12 to 24 doses
	Vit A & D Conc	M	1 cc weekly
Tularemia	Neo-Lacmanese	M	1 cc daily

U

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Ulcers, Corneal	Neo-Lacmanese	M	1 cc daily
	Lactpro	M	5 to 10 cc every 3 to 5 days
Indolent	Calcium Glucosan	V	10 cc, then 20 cc, then 30 cc every 3 to 4 days
	Benzolin	T	
	Adestrin	T	
Peptic	Emetine HCl	V	6 cc every 2d day for 6 doses Rest 7 to 10 days then give a 2d course
	Aluminum Hydrogel	O	1 tsp $\frac{1}{2}$ hour before meals 3 to 6 times a day
Undescended Testicles	Pituitary Anterior	M	1 cc twice a week
	Pituitary Anterior-Ovarian	M	2 cc twice a week
Undulant Fever for collapse	Soliment	I	
	Neo-Lacmanese	M	1 cc every 1 or 2 days
	Camphor in Oil	M	1 or 2 cc every 2 to 4 hours
Urinary Retention, post-operative	Methenamine	V	31 grs 2 hours after operation
	Methenamine-Salicylate	V	10 to 20 cc daily
	Dextrose	V	300 cc 25% solution, then 200 cc

V

INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Varicose Veins	Inveride	V	2 to 10 cc each varix, maximum 20 cc.
	Sodium Salicylate w Urethane	V	1 cc each varix, later 2 cc Up to 8 cc at sitting
	Quinine-Urethane	V	$\frac{1}{2}$ to 1 cc each varix 5 cc at sitting after 1st Intervals 5 to 7 days
	Sod Morrhuate	V	1 to 5 cc, every 2 to 7 days
Vincent's Angina (Trench Mouth)	Breon Bismuth Emulsion	M	1 cc every 8 to 10 days

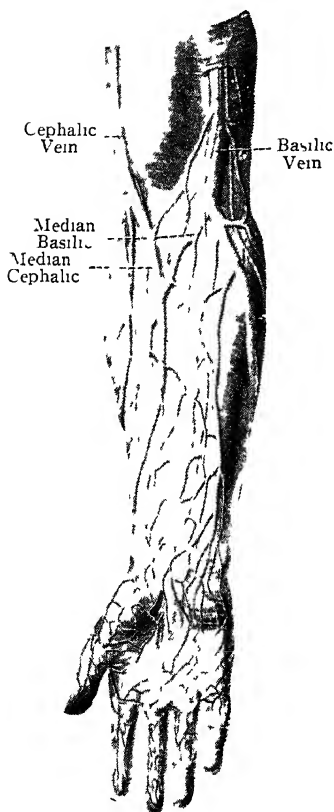
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INDICATION	MEDICAMENT	ROUTE	DOSE AND INTERVAL
Wounds	Adestrin Oint	T	
	Benzolin Oint	T	
	Ureajel	T	
	Meic-Muth Powder	T	
for local anes- thesia	Procaine	M	as required



ANIMAL EXPERIMENTATION and biological standardization guard against impotent products and serve to determine the toxicity and efficacy of many drugs. A colony of Wistar Institute strain, albino rats is maintained in the Breon laboratories for toxicity tests and drug assays.

PARENTERAL ADMINISTRATION



With many drugs, the difference in effect between medication by mouth and via the vein or subcutaneously is purely one of degree, the more direct route giving an intense but brief action. Some drugs, however, having the same physiological action whether given by mouth or parenterally, nevertheless evince phenomena resulting from their sudden joining of the blood stream that are never seen by the peroral route. To this extent they take on the aspect of entirely different therapeutic agents.

An example is the familiar sodium iodide, whose effect by mouth may be slow and non-visible to the patient until he becomes discouraged, dissatisfied and quits the medication—if not the doctor. Another example is the giving of liver in pernicious anemia, where from forty to sixty times the amount of liver is required by mouth as by intramuscular injection to achieve corresponding blood regeneration.

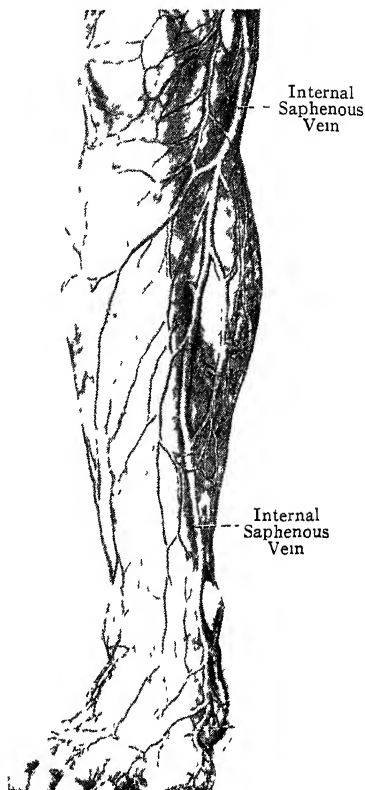
In giving medicaments parenterally, the physician knows the exact amount of the drug entering the system. Drugs given by mouth are subjected first to the acids, then to the alkalies of the digestive tract before reaching the blood stream and the tissues. These chemicals may cause significant changes in the nature of the drugs administered, with resultant lack of benefit to the parts they are desired to affect.

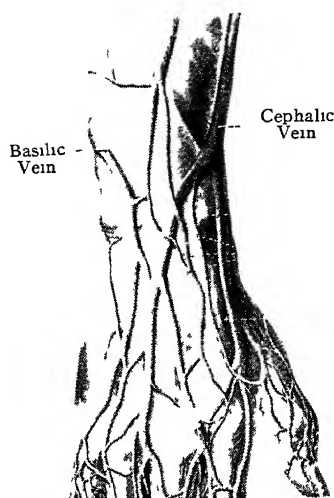
When injected there is no loss of time in waiting for the drugs to be absorbed through the digestive organs, they are immediately carried to every cell served by the blood. There is no loss of the drugs in assimilation or by elimination, they exert their full therapeutic effect.

Another advantage not to be disregarded is the fact that the patient is at all times under the physician's control when intravenous treatments are administered. It is obligatory upon the patient to report to the physician for each treatment. There is no opportunity for the drug which the physician desired administered to be changed before reaching the patient. There is no chance for misunderstanding of directions or of a failure to comply with them. Overdosage or underdosage as frequently taken by patients are avoided entirely.

Each medical measure while new is abused by some enthusiasts through indiscriminate use. Intravenous medication has passed through this period. There is less and less thoughtless making of injections where a simpler and more convenient method is adequate. On the other hand parenteral administration will continue to increase in the aggregate because of better understanding of diseases and circumstances in which it is most efficient. Conservative men are thus free to secure its advantages—particularly since risks of the method have slowly been cleared away by improvements in solutions and in technic.

Unquestioned times to utilize the intravenous route are (1) when rapidity of action is paramount, (2) when great intensity of action is required, (3) when the volume of the injectable dose is large, (4) to secure direct effect within the blood. Finally, when indicated, it should not be left as a last resort.





We have no intention of doing other than to recommend care in the injection of all drugs with special thought given to the more potent or more toxic chemicals and to hypersensitive patients. But now-a-days general and loose warnings on the dangers of intravenous medication are likely to be a sign that the "authority" issuing them is not one in practice and may have had little or no personal experience with the method. Where are the fatalities that are unknown to other methods or the seriously untoward effects? They are not seen by a multitude making injections daily nor by those who make or supervise thousands of treatments yearly.

"Reactions" and How to Manage Them

If patients are questioned and those hypersensitive to certain drugs are given individual consideration, if the solution used is prepared by a reliable laboratory, particularly one specializing in the preparation of sterile solutions, and if the administration accords with the clearly-defined principles of this form of medication—untoward effects will seldom be seen—rare in themselves and in relation to the number of injections given. However, there are conditions under which unpleasant effects may occur.

1 Needle shock. Because of lack of balance in the vasomotor or other branches of the nervous system, the patient may have some nervous twitchings and faint at the time the needle is introduced or withdrawn. Such reactions are counteracted by lowering the patient's head, applying cold cloths to face or placing a cloth to the patient's nostrils with a small quantity of aromatic spirits of ammonia.

2 Flushing of the face, burning sensation, a transient urticaria, edema of the lips, tongue and eyelids, nausea, vomiting, cyanosis, dyspnea, heart distress, etc., possibly may appear at the time of injection, or even a short time afterwards. These reactions may be due to

the fact that the patient has eaten heartily immediately before the injection or afterwards, to excessive exercise previous to injection, or to the patient's general condition. Fortunately these reactions are not as alarming as they may seem and require little or no treatment. In the more severe reactions, seven to ten minims of epinephrine 1:1000 solution are given subcutaneously, and repeated in 20 to 30 minutes if required, or 5 to 10 cc of sodium thiosulfate, if the ampule previously given contained arsenic or mercury. Ten cc of calcium chloride 10% intravenously will relieve anaphylactic shock.

If the patient becomes nauseated and vomits, the medication should be stopped for a week or two, and if on resumption the reactions are of intolerance, the method should be discontinued, for it is then apparent that the patient will not tolerate drugs given in this manner. Cases of this radical character, however, are uncommon.

"Speed Shock" Avoided by Injection of Two to Three cc per Minute

Some patients with heart dysfunctions or vasomotor disturbances which would routinely be classified as contraindications to intravenous medication may assimilate without incident the drugs by this route when the solution is properly prepared and if it is given sufficiently slowly. The gratifying scarcity of untoward effects in intravenous medication misleads some to carelessness and haste in making injections.

Drs. H. F. Hyman and Samuel Hirshfeld experimented at length with this subject and concluded that "speed shock" can be produced with a number of familiar drugs and that this reaction is based on a technical error, not on chemical, physical or immunologic causes. They believe that speed shock may follow the rapid intravenous injection of any chemical. A reaction occurring soon after the giving of the drug is symptomized by a rapid fall in blood pressure, respiratory irregularity and incoagulability of the blood. The site of the disturbance is probably in the liver cells and its nature seems to be similar to that of the anaphylactoid reaction, the post-transfusion chill and protein shock.

These workers have shown on the other hand, the great tolerance to huge doses of many medicaments intravenously and the acceptance by the system of quantities of fluid provided the rate

of admission is reduced to two or three cc per minute Hyman and Hirshfeld found despite the general recognition of the desirability of slow administration, that understanding of the words differ and some regard a flow of 30 to 50 cc per minute, a slow injection

If the physician does not have the time to devote to the properly slow introduction of solutions, a young woman technician trained in the details of parenteral injections may be invaluable. Feminine fingers have a more delicate tactile sense in entering the needle in the vein and their owners usually have more patience to watch the syringe empty slowly

INTRAVENOUS MEDICATION IN CHILDREN

Intravenous administration of fluids and non-irritating drugs to children is applicable and effective and is assuming more importance. In general the technic is the same as in adults but the dosage must be gauged with care and the vessels utilized in infants are likely to be different

In Small Children

If veins at the bend of the elbow are too small, the external jugular vein on either side is often accessible

To use one of these the child is placed upon its back, a roll of cloth under the shoulders and the head carried well backward and to one side. Slight pressure by an assistant on the vein just above the collar-bone aids the visibility. Also, if the patient is old enough to take directions, have him close the lips and blow several times. These measures reveal the vein just below the skin. The site is sterilized in the usual way.

The needle is inserted in the vein's most prominent area to the rear of the sternocleidomastoid muscle. The needle should be parallel with the course of the vein and point toward the clavicle. The appearance of blood in the syringe shows the needle to be properly entered.

Although intravenous injections in infants of less than 18 months are practicable, being made through the anterior fontanel of the cranium into the superior longitudinal sinus, and are not difficult for a practiced operator they should not be attempted except by experienced workers.

Dosage for Intravenous Medication in Children

Intravenous medication is as applicable and as effective in treating diseases in children as in adults. The general technic is the same, but the dosage must be adjusted in the same manner as for medicinal substances administered by other methods.

The following from "The Principles of Therapeutics," by Oliver T. Osborne, may be followed in calculating the dosage of Breon Intravenous solutions for children:

"At 20 years, the adult dose

"At 10 years, half the age, half the dose

"At 5 years, one-quarter the age, one-quarter the dose

"At $2\frac{1}{2}$ years, one-eighth the age, one-eighth the dose

"At 1 year, one-twelfth the dose"

"If the child's age is between the ages given in the table, a little more or a little less, as the case may be, then the dose called for at the age in the table nearest the child's age will be the average dose.

"The weight of the patient is really the scientific factor in determining the proper dose, hence the dose for an underweight child of five years should be less than that called for by the table, while an overweight child of three years should often receive a dose for the five-year period.

"For ready reference it may be noted that a normal baby five months old weighs about 15 pounds, at the end of a year, about 20 pounds, at the end of two years, about 30 pounds, and from then on it should gain from four to six pounds a year until at fifteen the child should weigh not far from 100 pounds. Up to this period the boy and the girl weigh about the same.

"A drug that is rapidly excreted may be given in full doses repeated as rapidly as it is known to be excreted. Generally, in severe cases the administration should be daily, moderately severe, every other day, mild cases, every third to fifth day."

GENERAL CONTRAINDICATIONS TO INTRAVENOUS THERAPY

Intravenous medication must not be used

1 When the kidneys are materially damaged— functioning less than fifty per cent

2 When heart lesions are present, except with great caution

3 When the patient has shown idiosyncrasies or intolerance for the drugs when taken orally, except digestive disturbances It is always well to question the patient as to known idiosyncrasies to any particular drug

4 When the operator has not had sufficient practice with the method to introduce the needle into the vein easily, especially if the patient has small or hard veins, is obese, or where the vein is difficult to use A physician whose experience is limited should first inject only in those who have veins readily located and that can be easily entered As the operator's skill improves, patients with more difficult veins may be successfully injected

EQUIPMENT FOR INTRAVENOUS INJECTIONS

Luer Syringes

20 cc and 10 cc

Luer Needles

23 to 25 gauge Larger ones should not be used as one is likely to administer the solution too rapidly

Sterilizer

Hot water— gas or electric heated, or autoclave Small enamel pans 8 x 3 inches may be used and heated by a gas or electric plate

Tourniquet

Extensive experience has shown the arm cuff and air bulb from a blood pressure gauge to be an excellent and convenient tourniquet It constricts the superficial veins without undue compression of the deeper circulation It does not pinch the patient's flesh The degree of compression is known to the operator by his glancing at the mercury column of the gauge When ready for the solution to enter the vein the compression is released at a touch and without disturbance of the needle Also one large diameter or two small soft rubber catheters make a simple and satisfactory tourniquet They may be held

in place by a hemostat which is easily released when ready. Special tourniquets may be purchased, but in general they have not been found to have advantages.

Alcohol 70%

For sterilizing skin at site of injection. The use of iodine to disinfect the skin before the injection has the disadvantage of making the vein somewhat more difficult to locate, owing to the discoloration of the skin. Alcohol 70% is therefore to be preferred.

Liquid Collodion may be applied over puncture wound to serve as a protective dressing against soil.

Care of Equipment

When a physician cares for his own equipment, the pressure of time will usually lead to a minimum of attention to its care. If he employs a technical assistant, time will be gained and embarrassing delays may be avoided by rigidly training the assistant in the cleaning and care of needle and syringe equipment.

Sterilizer

Where the water is hard, the sterilizer should be cleaned every few weeks by placing a saturated or 15% solution of trisodium phosphate in the sterilizer over night to loosen the scale. The sterilizer may then be thoroughly cleaned in the usual way.

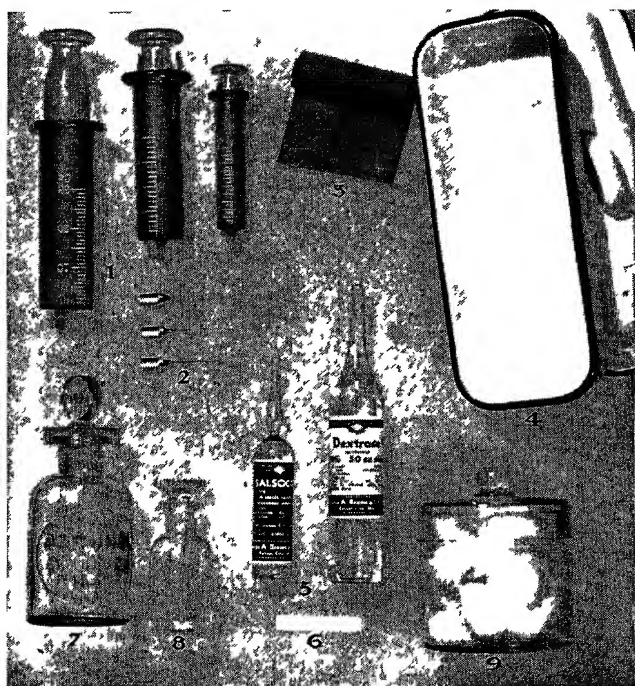
Sterilization

Grain alcohol 70% is a time-saving and satisfactory sterilizing agent for the syringe and attached needle if the equipment is reserved for injections in one or two persons. When alcohol is used, it is drawn into the syringe through the needle as the first move in preparing for the injection. It is allowed to remain until the patient is prepared. The alcohol is then expelled and sterile distilled water is used to rinse the syringe and needle before filling with the solution to be injected.

For large scale sterilization the only safe means is by boiling. Five minutes within the water after it comes to boil is sufficient unless the equipment might be contaminated with spore organisms. If so, at least 15 minutes will be required.

Autoclaving syringes and needles may be practiced especially when they are to be kept sterile for several hours.

Sterilization, either by boiling or autoclaving, without separating the plunger and barrel is practicable. This is of some convenience in clinics when a large number of syringes are in



EQUIPMENT FOR INTRAVENOUS INJECTIONS ILLUSTRATED

- 1 Luer type all-glass syringes
- 2 Needles
- 3 Rubber tape to use as tourniquet
- 4 Sterilizing receptacle
- 5 Ampules containing sterile solutions for injection
- 6 File to nick neck of ampules
- 7 Alcohol 70%
- 8 Collodion
- 9 Container for cotton

use In localities with an excess of alkali in the tap water, it reduces the erosion on the parts Distilled water should not be used for sterilization, as it tends to draw chemicals from the glass

Every precaution is taken at the Breon Laboratories to insure the sterility and safety of each ampule's contents up to the time of its injection Occasionally an ampule or vial in transit is cracked though not broken, and air enters the ampule through the crack to impair the contents and unfit it for use Each ampule should be examined before use If a crack is found or the contents are not clear, the solution should not be injected Before filing neck off ampule, it is well to warm it to about temperature of body by placing it in a pan of warm water

Syringes

Pistons of new or poorly kept syringes may not work easily A little sodium bicarbonate and glycerin rubbed on the piston and worked into the barrel will usually overcome any tightness If syringe parts become stuck due to foreign matter between, the plunger and barrel can usually be separated by boiling in water containing 25% glycerin As soon as the parts are loose, remove the plunger while still hot to prevent recurrence of the sticking

Arsenic and iron stains may be removed from syringes by aspirating concentrated hydrochloric acid in the syringe A cotton swab wet with hydrochloric acid should be used on any surface that does not clean by aspirating Dye stains may be removed by aspirating acid alcohol, 5% nitric or hydrochloric acids in 95% alcohol, in the syringe

Needles

It is well to keep in reserve at least a dozen needles, varying somewhat in gauge and length Ordinarily the best needle sizes for intravenous injections are $\frac{3}{4}$ inch long and either 25, 24, or 23 gauge If the vein shows agility in rolling in the connective tissues or if its wall is tough, a needle as small as 26 gauge will enter it most easily Needles should have bevels which are medium in length and nearly straight Needles are not desirable that have long bevels because they are harder to control in the vein and short concave bevels have a tendency to cling and tear the skin or the vein when forced in

After use, the needle should immediately be washed in water and rinsed The rinsing is quickly done by attaching the needle to the syringe and aspirating alcohol or ether through it several

times Store the supply of needles in a glass jar with a layer of cotton on the bottom and filled with a 2% solution of phenol in glycerin The needles must be well immersed in this solution When about to make an injection, remove needle, rinse in water to remove glycerin and sterilize by boiling with other equipment Needles that have been in use for sometime may appear to be as good as new, but repeated boiling tends to weaken them, the insides corrode and a needle may break, usually where the shaft is joined to the butt

To Sharpen Needles

Unless needles are discarded frequently, they should occasionally be honed Dull needles cause unnecessary pain and lead to greater dissatisfaction on the part of the patient than more important parts of the physician's ministrations The technician should be provided with a fine-grained honing stone impregnated with thin mineral oil This is fastened to a flat surface. The needle may be pushed through a large cork at an angle that will bring the bevel even with the smaller flat face of the cork The cork is then held so that the bevel of the needle is flat on the stone. This position is maintained during honing Honing is accomplished with a motion away from the operator and continued with forward and backward strokes After honing the flat of the bevel, the needle is pushed further through the cork, turned to the right and left and any ragged metal is removed by drawing the edge of the bevel across the hone

THE INTRAVENOUS TECHNIC

Filling the Syringe

With a pledget of cotton or a small piece of gauze saturated with 70% alcohol sterilize the neck of the ampule With the file furnished with the package, make a scratch a little above the shoulder of the ampule Tap the head of the ampule and it will break off at the file mark Hold the ampule with opening downward with two fingers of the left hand The needle which has been attached to the syringe is inserted in the opened ampule by the right hand The remaining fingers of the left hand steady the needle in place With the right hand withdraw the plunger and fill the syringe with the contents of the ampule Then hold the syringe vertically and press up upon the plunger until the air is expelled A full drop or two of the solution from the needle will indicate that all air bubbles are expelled

The Patient

The patient must not be excited and if nervous, he should be assured that there is no reason for apprehension. Any pain is but momentary and is less than from a subcutaneous injection. An assured manner on the part of the operator will inspire the patient's confidence.

If there is likelihood that a nervous patient may jerk the arm or leg at the time the needle is inserted, anesthesia of the area can be obtained by the injection of about 2 minims of procaine solution preliminary to entering the vein. A very small needle is used and a wheal of the local anesthetic is made in the skin above the vein at the site of intended injection.

If the physician has decided that intravenous treatment is for the best interest of the patient, it is a mistake to show that any doubt is entertained that the patient will accept such treatment. Of course if the patient objects and the objection is based on a good reason—one better than mere fear of the needle prick, the injection will not be urged.

It is an advantage to have the patient lie down on a table, couch or bed. Patients lying down are quieter, their muscles are relaxed, and it is easier to make the injection.

Selection of Vein

The median cephalic or median basilic is usually used. Examine the right and left arm of each patient for these veins and select the arm which shows them most prominently.

Apply the tourniquet above elbow, have patient open and close hand several times to bring the veins into view. Massage the arm with the palm of your hand using an upward motion. This will distend the veins and often make small and embedded veins visible or at least palpable.

Finding Difficult Veins

In the obese and rarely in other individuals some difficulty may be encountered in finding a suitable vein for injection. The following suggestions are offered.

Apply tourniquet above elbow of patient's arm, have patient close hand, but not tightly, apply hot applications on arm below elbow for several minutes. Then the vein and its course may often be found by palpating the vicinity with the ball of one of the more sensitive fingers.

If the above procedure is not successful, with the tourniquet applied very tightly above the elbow, wrap a rubber elastic band-

age tightly about the arm, commencing at the wrist and ending an inch or more from the site where you expect to enter the vein. By this method the veins at the elbow are fixed and are markedly distended making it easier to insert the needle. The bandage as well as the tourniquet must be removed before injecting any solution.

Rarely it may be necessary to use the veins over the back of the hand or the wrist, and if these veins seem small and not easily accessible, select the internal saphenous of the leg and ankle or the popliteal at the back of the knee.

The Injection

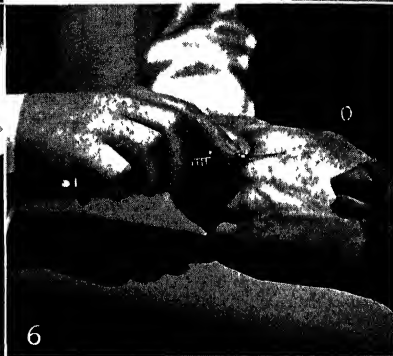
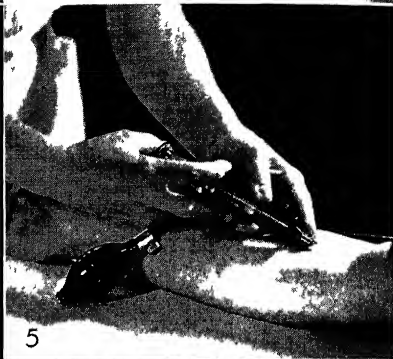
An arm rest or table adjusted to about the level of the body should be at the side of the patient. Be sure that the patient is not holding his arm tightly to his side and that his shirt, undershirt or sleeve band is not acting as a constricting band.

With a pledget of cotton saturated with 70% alcohol, cleanse and sterilize the patient's arm at the selected site of the injection. Apply tourniquet about three inches above the selected site. Do not make it too tight. You should be able to feel the radial pulse after applying the tourniquet.

With the patient lying down, the skin cleansed and sterilized, the tourniquet in place, syringe filled with the solution, and the air expelled, the operator places himself in a comfortable position with the patient's arm in front and somewhat to the right. A few upward strokes are made with the hand upon the patient's arm which will cause the vein to stand out prominently.

Grasp the patient's arm between the thumb and fingers of the left hand, about three inches below selected site of injection. Pull downward upon the skin of the arm. The immobilization of the vein to prevent rolling is often most important. An easily moved and tough vein wall calls for the smallest, sharpest needle.

With the bevel of the needle upward and toward the graduated marking on the syringe, let the syringe rest on the fingers of the right hand, steadied by the thumb on top. The shaft of the needle is placed directly over the center of the selected vein, parallel to its long axis. The act of piercing the skin and vein is a divided movement. First, slightly elevate the syringe so that the needle is forced into the skin and carried a fourth of an inch or less directly over the wall of the vein, where it is seen as a ridge. Second, the syringe is further slightly elevated to force the needle through the vein wall. While



- 1 POSITION OF OPERATOR WITH PATIENT RECUMBENT
- 2 FILLING SYRINGE FROM AMPULE
- 3 METHOD OF GRASPING SYRINGE
- 4 TOURNIQUET ADJUSTED INSERTING NEEDLE IN VEIN
- 5 TOURNIQUET RELEASED INJECTING SOLUTION
- 6 INSERTING NEEDLE IN VEIN OF HAND

there must be enough pressure to insure the prompt passage of the needle, control is necessary to check the movement when in the lumen so as not to pierce the distal wall of the vein

Remove the left hand from the patient's arm and with it hold the syringe and needle in position, draw back the plunger slightly. Blood will come into the syringe if the needle is properly located in the lumen of the vein. The needle may then be advanced in nearly a horizontal position until it extends about a half inch within the vein. With the right hand release the tourniquet. Proceed to inject solution slowly.

Dutton in his work on Intravenous Therapy says

"If for any reason you cannot obtain a free flow of blood through a needle after introduction, or a free flow of fluid into the veins, the following suggestions may prove of value

- 1 Depress the point of the needle without advancing. The bevel may be shut off against the top of the vein.

- 2 Palpate the point with the free hand. It is easily recognized if it is still above the vein.

- 3 In using the syringe, twist the piston in the barrel, pulling backward. It may be stuck.

- 4 Slowly withdraw the point of the needle if it cannot be felt above the vein, lifting up as you do so. If it has entered the opposite wall, it usually comes away with a palpable snap. Then advance again, pressing down hard against the arm with the back of the syringe hand and lifting the point, to flatten the angle of the needle to the vein.

- 5 If the above procedure fails twice, withdraw the needle until the point is just short of the skin puncture, and advance again, after repalpating the vein. This is a last resort.

- 6 If the fifth procedure fails on one or two trials, withdraw the needle entirely and do not re-introduce it until you are satisfied as to its point, and that it is not plugged.

- 7 Make no comments audible to the patient regarding the condition of your needle.

- 8 Never try to inject through a hematoma. Use another vein or stop.

- 9 Never inject and ask if it hurts, if you have the slightest reason to suspect that it will. To inject a little to find whether you are in the vein or not is absolutely inexcusable.

10 Make every effort to have one puncture suffice, using the needle in various directions through the same puncture. Once well in the vein, you release the tourniquet."

Caution— Never begin the injection until "the constrictor on the patient's arm has been released, but this should not be done until the needle is properly located in the vein, and care must be exercised not to disturb it when the tourniquet is released." Then slowly inject the solution.

The advantages of intravenous medication warrant a little time, 30 to 60 seconds for each 1 cc of solution—"a mil a minute." Because time passes very slowly under such circumstances it has been suggested that the speed of the injection be checked by observing a watch. The piston of the syringe can best be controlled by a screwing motion, pushing it forward while at the same time it is turned round and round.

When the contents of the syringe have been placed in the vein, withdraw the plunger slowly and remove a cc of blood. This will remove the drop or two of solution remaining in the needle and which might enter and slightly irritate the adjacent tissues when the needle is withdrawn. Remove the needle rapidly, then press a piece of sterile cotton over the puncture and exert pressure for a minute or two. Do not press upon the puncture with the cotton while the needle remains in the vein. This gives rise to the possibility of forcing the point of the needle down and against the lower wall of the vein and scratching it as the needle is removed. The site of the injection may be touched with liquid collodion to act as a protective dressing. If the patient is reclining it is well for him to maintain that position for a few minutes.

In most cases it is not actually necessary to have the patient abstain from food, to be supine to receive the injection, nor to remain lying down for a time, but these precautions should be kept in mind as part of the ideal procedure.

INJECTIONS WITHIN THE ARTERIES

In an endeavor to master localized infections in an extremity, such as sometimes follow lymphangitis, arthritis, gaseous gangrene, or diffuse cellulitis, it may be desirable to inject an antiseptic agent into the artery. This is with the purpose of avoiding dilution of the solution but to concentrate it in the infected area before it passes through the circulatory system.

Arnulf and Frieh¹ used mercurochrome 2% and report encouraging results, one injection usually being enough. Doubtless other antiseptics may be used with the same object.

When the infection is in the leg, injection is made in the femoral artery, when in the arm, the solution is placed in the subclavian or brachial arteries. Not more than 3 or 4 injections should be given in any case. If relief is not obtained within 1 or 2 days, surgical measures should be taken. General precautions at least equal to those required in making injections in the vein are necessary. In particular, the solution should enter slowly to avoid arterial spasm.

INJECTIONS WITHIN THE HEART

Crises may arise when an intracardiac injection is proper, although it is far from an every day need. The indication is cardiac stand-still from shock, toxic gases, and especially that due to a general anesthetic. It will not be attempted in heart stoppage after prolonged disease or chronic heart dysfunction.

The Stimulant

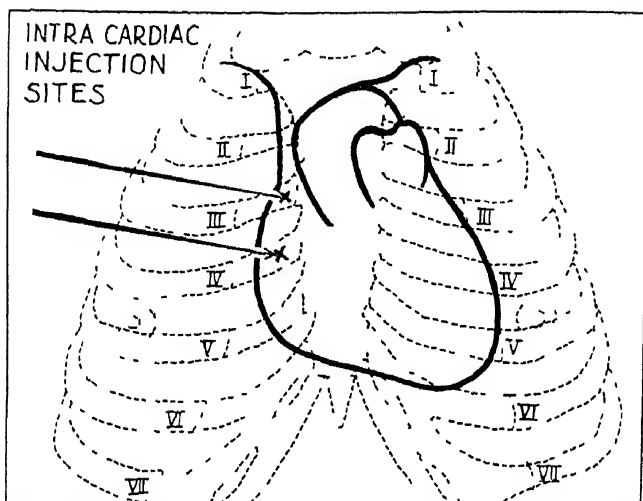
The drug of choice is epinephrine. The drug alone is not the stimulant but the prick of the needle is also a goad to re-establishing heart contractility.

The Technique

The longest, finest needle at hand will by force of circumstance be used. Preferably a 21 gauge needle, 3 to 3½ inches long is attached to a 2 cc hypodermic syringe. 0.5 to 1 cc of epinephrine 1:1000 is drawn into the syringe.

Heretofore the procedure has been to inject into the left ventricle by inserting the needle through the fourth interspace just

¹ Arnulf, G., and Frieh, P., *Presse med.* 44:629, 1936.



medial to the mid-clavicular line But Hyman¹ of the Navy found that injections into either ventricle are likely to incite ventricular extrasystoles and fail to establish a normal adequate cardiac rhythm

On the other hand, he shows that injections into the right auricle are capable of setting up a normal contractility within ten minutes after heart stoppage The site of injection is either the third or fourth right interspace, just lateral to the sternum The needle is directed slightly toward the median line After passing through the chest wall, there will be added resistance when the needle meets the heart If there are any contractions of the heart, they will be noted by a light pendulum movement of the needle After coming in contact with the heart, the needle is advanced 3 or 4 cm farther and the plunger drawn back slightly If blood appears in the syringe the epinephrine is injected and the needle quickly withdrawn If there is no sign of cardiac contraction in one or two minutes, the procedure may be repeated

1 Hyman Lt Com , Albert S, U S N Bulletin, XX 133,205

TECHNIC OF INTRAMUSCULAR ADMINISTRATION

Intramuscular medication results in more rapid absorption than subcutaneous. If there is no advantage in concentrating the solution in the blood stream or in securing powerful, though short, effect upon an area or organ it may be preferable to the intravenous route. If the substance for injection is not irritating to the tissues, this method may be employed where intravenous medication is impracticable.

Intramuscular medication, like intravenous medication, has some distinct advantages. The amount of drug given is definite, it provides for a slow systemic absorption which is often desirable. The patient is compelled to keep in touch with his physician and is encouraged to be persistent in treatment when definite results are seen, even though visits to the physician's office may be inconvenient.

Equipment.

- | | |
|-----------------|------------------------------------------------|
| <i>Syringes</i> | 1, 2 cc all-glass Luer type syringe |
| | 1, 5 cc all-glass Luer type syringe |
| <i>Needles</i> | 2, 22 gauge, 1½ inch length |
| | 2, 20 gauge, 1½ inch length |
| | 2, 19 gauge, 1½ inch or 18 gauge 2 inch length |
| | 6, 25 gauge, ⅜ inch length |

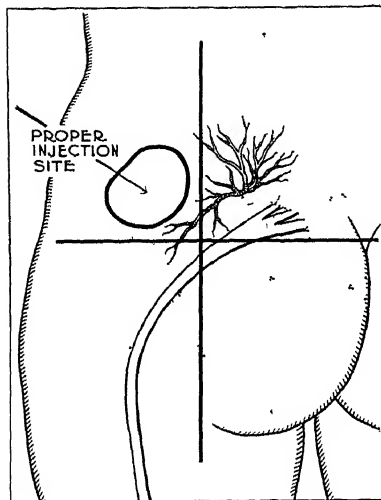
The needle should be chosen in accordance with the type of medicament to be injected since it is the drug and its vehicle that regulates the site of injection. 26 and 25 gauge, ½ or ⅜ inch length are large enough for injections most frequently made, the giving of water-soluble drugs in the muscles of the arm. 22 to 18 gauge needles are for injections in the buttocks, the proper length depending on the amount of fat to be traversed in the individual patient.

The bevel of the needle should be sharpened to a spear point. Do not use a needle with a wire edge—it tears. It is well to examine the needle to be used for possible defects before sterilizing. Secure attachment of the cannula to the butt should be noted and the cannula's strength tested by pressure between the fingers. Stainless steel needles are the best, especially for deep intramuscular injections, because the possibility of their breaking is less.

Site of Injection

Stress must be laid on the location of the injection because serious accidents may arise through the traumatism of blood vessels or of the sciatic nerve. If a heavy solution, such as a mercurial

oil, is injected into a blood vessel, there is danger of pulmonary embolism Bismuth in oil, and mercury when given intramuscularly, are injected into the gluteus maximus Others, such as the cacodylates, and the gland extracts, are usually, for convenience, placed in the deltoid Muscles in the scapular region and abdominal wall may also be utilized



SITE OF INJECTIONS IN THE
GLUTEAL MUSCLES

The proper site for an injection in the gluteal muscles is described as follows

On the middle of a line which joins the top of the intergluteal crease and the anterior-superior iliac spine, a perpendicular line is pictured With the point of intersection as a guide, a circle is described in the upper, outer quadrant but near the angle formed by the intersecting lines All injections should be made within the limits of this circle Alternate buttocks are utilized and exact previous sites of entrance avoided

Sterilization of Injection Site and Equipment

The selected site of injection should be sterilized with 70% alcohol

After sterilization the syringe and needle should be kept in the warm water until used A warm syringe and needle prevents coagulation of oily or thick based substances and aids in their easy administration

The Drug

Whatever the medicament selected for administration, it should be warmed to body temperature and put into a homogeneous mixture Place the ampule in water at 110 degrees fahrenheit for five minutes and shake the ampule well before opening

To Fill Syringe

File neck of ampule with file supplied in each package and with a tap on the neck the ampule is opened Place needle, which has been previously attached to syringe, into ampule and draw back the

plunger Expel the air in the syringe except that it is well to leave a small bubble at the top of the syringe which will follow and clear the cannula of the needle of the last drop of the fluid It will then not be deposited in the subcutaneous tissue as the needle is withdrawn, and perhaps irritate For the same reason the needle should be wiped upon sterile gauze before inserting in the muscles

Position of Patient

Injections into the buttocks are best given with the patient prone on a table The standing position induces tenseness of the tissues, which may allow leakage of the injected substance along the needle track and make a careful estimation of the depth of tissue difficult

After the patient assumes the prone position, relaxation should be complete The arms are dropped over the sides of the table The lower legs are raised five or six inches by placing a pillow or roll under the ankles, or nearly as good relaxation is obtained by letting the patient's feet extend over the foot of the table and directing him to "toe in"

The Injection

- 1 Place the left hand flat on the buttock and with moderate pressure draw downward toward the patient's heel, thus slightly shifting the skin and flattening and fixing the tissues

- 2 The needle is introduced swiftly but with firm control at an angle of about 20 degrees from the vertical While inserting the needle through the tissues, press with the index finger against the piston just above the barrel to prevent the piston from descending and forcing some of the medicament into the superficial and fatty tissues

- 3 Hold the syringe with needle attached in position and draw back upon the barrel for 10 seconds If blood should appear in syringe it is an indication that a vessel has been entered If this occurs the needle must be withdrawn and reinserted in another location Inject drug slowly

- 4 Only moderate pressure on the piston is exerted Excessive pressure may force some of the solution backward into the superficial tissues where it will irritate When contents of syringe have been injected, withdraw needle quickly The left hand pushes the skin upward to its normal position which serves as a valve to help prevent leakage

- 5 At once apply over the site of the injection, cotton or gauze

moistened with 70% alcohol, using some pressure and light massage for a few moments. A little collodion may be placed over the puncture to serve as a dressing against soil.

If during injection the patient for no evident reason, coughs, withdraw needle at once, because the drug has possibly entered a vessel, has traveled to the lung and caused an embolus. These emboli usually resolve without any serious consequences.

Occasionally painful nodular areas result which may even be thought to be abscesses. But hot applications frequently applied will relieve the pain and soreness. If one of these areas should soften and rise perceptibly toward the surface of the skin, and if on palpation a fluctuation is noted, aspirate with a syringe and needle, thereby avoiding any surgical interference.

When Injecting Heavy Preparations

Heavy and viscid preparations like bismuth and mercury in oil require certain refinements of technic to insure satisfactory injection and absorption.

The suspension is drawn into the syringe through an 18 gauge, the largest calibre needle. This is then removed and another needle with which the injection is made is affixed to the syringe.

In removing the latter needle from the sterilizer, the water within the lumen is retained there by keeping the needle in a horizontal position until the needle is placed on the syringe. This permits verification that the lumen of the needle is open, as a slight pressure should be enough to free the water.

The outside of the needle cannula being devoid of bismuth, or other drug, there will be no trail of the drug left along the track of the needle as it is inserted. When the syringe is emptied it is done slowly to avoid bruising the tissues and to prevent forcing any of the drug backwards into the superficial tissues where it does not have the best chance to be absorbed. The drug must not be deposited in fat.

The site is massaged immediately after the needle is withdrawn and alcohol has been applied. The patient is instructed also to massage the locality daily or oftener. The fingers, not the tips alone, are used and the action should be firm but not rough.

Intramuscular Medication in Infants and Children

is the same as described above for adults. However the dose of the drug is adjusted to weight or age of the child.

SUBCUTANEOUS INJECTIONS

In subcutaneous (hypodermic) administration, the medicament is injected in the loose areolar tissue beneath the skin. The solution is thus placed in the lymph and soon percolates into the blood stream through the walls of the capillaries. Exceptions to this are cases of below normal functioning of the circulation and when non-diffusible and colloidal agents are injected. The latter may take several hours for absorption from subcutaneous tissue. Absorption is much less rapid than from intravenous injection and is somewhat less so than when the solution is injected intramuscularly.

It is not unknown for drugs to be injected subcutaneously that are ill-suited to this method. Those that are more than moderately acid or alkaline will cause pain. Irritant agents also will cause discomfort and concentrated or insoluble substances are irritant. They will be absorbed slowly or not at all.

A choice between the subcutaneous and intramuscular routes will usually be decided in favor of the muscles unless there is possibility of shock from a highly potent drug. In that case injection just below the skin with the slightly less rapid absorption is preferable.

Indications for Subcutaneous Injections

Subcutaneous injection is favored when the route by mouth is not open to use, as when nausea is present, or when there is need for greater speed, and when the drug is potent and the solution not over 2 cc in volume. Larger amounts may be given by slow infusion beneath the skin (hypodermoclysis) if sufficiently dilute.

Equipment

Syringes 1 cc or 2 cc all-glass Luer-type syringe 2 cc size in the longer shape are easier to manipulate even though small amounts of solution are given

Needles 3, 26 gauge $\frac{1}{2}$ inch length
 3, 25 gauge $\frac{3}{8}$ inch length

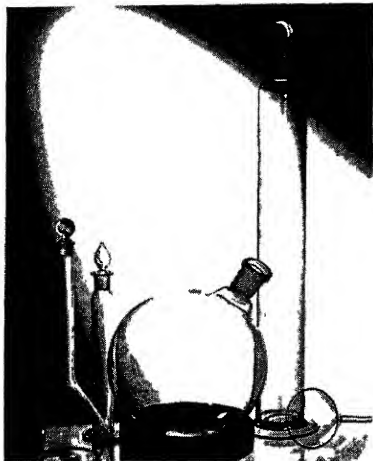


STERILE SOLUTIONS ARE MECHANICALLY AND ASEPTICALLY MEASURED
AS THEY ARE FILLED INTO THEIR CONTAINERS

STERILE SOLUTIONS

ANTIMONY AND POTASSIUM TARTRATE

(Tartar Emetic)



Indications

Bilharziasis, trypanosomiasis and various tropical cutaneous conditions. Of more moment to physicians in the United States is the use of the drug in granuloma inguinale, in lymphogranuloma inguinale (climatic bubo), and in chancroids. There are also reports of good results in Vincent's infection.

Contraindications

Should be administered with caution in the presence of heart irregularities and kidney dysfunctions.

Advantages

While antimony and potassium tartrate is not particularly effective against bacteria, it is highly antagonistic to certain parasitic protozoa, especially trypanosomes. One part in 500,000 is enough to destroy the latter in the test tube and in animals.¹

Description

For intravenous use, each 5 cc contains 0.05 Gm ($\frac{1}{4}$ gr, a 1% solution) of Antimony and Potassium Tartrate.

Supplied

- 5 cc size ampules, box of 6
- 5 cc size ampules, box of 25
- 5 cc size ampules, per 100

Code Word

ABSENT
BABEL
CHAFE

Dosage

The first dose should be small to determine any idiosyncrasy which may exist. The reaction, if any, is greatest with the first dose, diminishing with successive doses.

As a moderate dosage in bilharziasis and granuloma inguinale, 0.01 Gm (1 cc) is given as the initial dose. The dose is increased 1 cc on each second day, until 0.1 Gm is given at one injection. To avoid relapse, weekly injections should then be given for three months, followed by semi-monthly injections for four months. More intense dosage is sometimes given, injecting 0.04 Gm initially and increasing the amount by 0.01 Gm daily until 0.1 Gm is reached. This is then repeated every second day.²

In chancroids the injections are given at four day intervals and the amount is increased 1 cc at each dose until 10 cc are given at a dose.

To relieve leishmaniasis of the skin, it is usually sufficient to administer a course of intravenous injections totaling 0.3 to 0.5 Gm of Antimony and Potassium Tartrate. A total of 3.0 Gms or more is required in trypanosomiasis and after a recess of a month will probably call for a repeated course.

Lucia and Brown¹ found the maximum tolerated dose of Antimony and Potassium Tartrate in the rabbit to be six mg per Kilo. On the same basis the m.t.d. in a 150 lb man would be 0.4 Gm, or eight times the content of the 5 cc ampule.

Caution

Antimony and Potassium Tartrate is irritant and comparatively toxic. Injections should not be made within two hours after a meal, should be made as slowly as 1 cc in 10 seconds. Care should be taken to avoid placing any of the solution outside the vein, as pain will result.

1 Solis-Cohen & Githens Pharmac-Therapeutics

2 Whitman, W. A., Ann Clin Med 3:403, 1924

BISMUTH THERAPY IN SYPHILIS

Indications

Syphilis

In all the different stages but especially in cases intolerant or resistant to arsphenamines. As a supplementary treatment to arsphenamines. For the rapid cicatrization of ulcerated lesions and hypertrophic papules. Adapted to cardiovascular complications where arsphenamine may be dangerous.

Contraindications

It is now a dictum that any individual with early syphilis must be treated by more than arsenicals alone, if great susceptibility to relapse in malignant form is to be avoided. Neither should a patient receive bismuth or mercury exclusively. Patients with pronounced nephritis should not receive bismuth treatment. If the mouth is unhygienic, it should be made aseptic before bismuth is given.

Advantages

Levaditi, the discoverer with Sazerac of the value of bismuth in syphilis and one of its enthusiastic partisans, gives the following as some of its advantages: ¹

1 "It has a curative action in primary, secondary, and tertiary syphilis.

2 "Causes rapid disappearance of spirochetes from lesions, sometimes after first injection, more often after second.

3 "Sterilizes the lymphatic glands.

4 "Causes favorable modification of reactions of blood and spinal fluid.

5 "Bismuth often acts where arsenic fails.

6 "The one advantage of arsphenamine—its rapid action due to quick absorption, is counterbalanced by frequent relapses because of quick elimination.

7 "Bismuth is absolutely innocuous (This statement is doubtless intended to be subject to the reservation of suitable dosage.)

8 "The insoluble salts of bismuth suspended in oil and fat soluble compounds are preferred."

It is useful in treating "Wasserman-fast" cases, cardiovascular, and visceral cases. It is not effective in general paralysis, but whether the same is true of lesser degrees of neuro-syphilis is in disagreement. It may be given concurrently or in alternate courses with the arsphenamines and in conjunction with sodium iodide.

Physiological Action

As explanation of the action of bismuth in syphilis, the idea has been advanced that after injection the metal interacts with a tissue substance and forms bismoxyl. It is this circulating in the blood that acts specifically against the disease. The amount of bismoxyl is not equally generated by all tissues for the liver produces an exceptional amount.²

It has been pointed out by Stokes that the outstanding quality of arsphenamine is a direct spirocheticidal action. Mercury's affect is largely that of resistance stimulation. Bismuth fills the gap between these two, having something of the direct action of arsphenamine with an immunizing tendency. As it is also much less toxic to the host than the old types of mercury, it has in a brief time gone far toward displacing that ancient remedy.

Its cicatrizing action on syphilitic lesions has been noted by many careful observers. The change in the Wasserman reaction does not run parallel with improvement in clinical symptoms. In a majority of cases a negative test is not obtained until completion of the course and in some after a lapse of six weeks.

The following Breon Bismuth Preparations are available

1. BREON BISMUTH EMULSION

A complex potassium bismuth tartrate
Each cc contains

Metallic bismuth equivalent to 0.13 Gms	(2 grs.)
Procaine Base	2%
Special Almond Oil Emulsion	q. s.

The 130 mgm of metallic bismuth in Breon Bismuth Emulsion 1 cc is a much larger dose than that in most bismuth preparations which range from 22 mgms, to 75 mgms. As Breon Bismuth Emulsion is slowly and uniformly absorbed with little or no discomfort to the patient, it requires injection at much less frequent intervals and yet will keep the system under the influence of the metal.

COMPARISON OF BREON BISMUTH PREPARATIONS

Name of Product	Chemical Compound	Vehicle	Mgs of Bi per cc	Dose in Mgs of Bi	Dose in cc	Interval
Breon BISMUTH Emulsion	Complex potassium bismuth tartrate	Almond oil emulsion	130	130	1	Every 8 to 10 days
Potassium Sodium Bismuth Tartrate	Potassium-sodium bismuth tartrate	Suspension in oil	63	126	2	Every 5 to 7 days
Saccharin	Potassium bismuth saccharate	Aqueous solution	25	25	1	Every 3 days

As it is of thicker consistency than water-soluble bismuth, it does not pass through small needles as easily as the latter. It is intended for use in clinics or by those injecting bismuth in a number of patients daily, who are familiar with the proper technic. It is in enthusiastic use by such clinicians.

Breon Bismuth Emulsion Is Supplied

In glass stoppered bottles of 30 cc each

	<i>Code Word</i>
One bottle	DISMOUNT
Six bottles	DITTY
Twelve bottles	ENTHRONE
Twenty-five bottles	TEXTILE

In glass jars of 60 cc each

One jar	DISOBLY
Six jars	DIVEST
Twelve jars	ENTITLE
Twenty-five jars	THATCH

Dosage

The authors of the standard treatment of early syphilis, after the survey of University Clinics for the U S P H service, urge eighteen months' continuous treatment of early syphilis. A few weeks' complete rest from treatment in this period is pernicious, for it may permit great susceptibility to relapse in malignant later forms.

After a course of arsphenamine, 1 cc of Breon Bismuth Emulsion is injected deeply in the gluteal muscles every eight to ten days through a needle of 20 to 18 gauge. While largely dependent on the condition and response of the individual patient, the average case may receive a total of about 25 grams metallic bismuth or 20 injections to a course.

In secondary cases when there are definite symptoms of the disease, treatment may best begin with bismuth. This will avoid a possible severe Herxheimer reaction that may result from initial arsenical treatment.

2 BREON BISMUTH EMULSION (Single Strength)

The same form of bismuth as above but with only half the concentration in each cc In 2 cc oblong ampules only

Each 2 cc contains

Metallic bismuth equivalent	0.13 Gm (2 grs)
Procaine Base	2%
Special Almond Oil Emulsion	q s

Supplied

- 2 cc oblong ampules, box of 12
- 2 cc oblong ampules, box of 25
- 2 cc oblong ampules, box of 100

Code Word

DISGORG
TERMINUS
ESCAPE

Dosage

2 cc of Breon Bismuth Emulsion Single Strength are injected deeply in the gluteal muscles every eight to ten days

3. POTASSIUM-SODIUM BISMUTH TARTRATE

A salt containing 63% metallic bismuth in an oil suspension

2 cc contain

Potassium-Sodium Bismuth Tartrate	0.2 Gm (3 grs)
Benzyl Alcohol, by volume	2%
In an almond oil suspension stabilized with sodium oleate	

Potassium-Sodium Bismuth Tartrate is a general purpose anti-syphilitic agent. It contains approximately the same amount of bismuth in the 2 cc dose as is carried in 1 cc of Breon Bismuth Emulsion. It will be used in preference to a water soluble bismuth preparation when adequate dosage and the patient's ultimate good are placed ahead of ease of administration and a moderate degree of discomfort.

Potassium-Sodium Bismuth Tartrate is supplied

In oblong ampules of 2 cc each to permit thorough suspension of the drug and to facilitate withdrawing it from the ampule. Also in 60 cc glass bottles for use in clinics where the contents will be used rapidly.

	<i>Code Word</i>
2 cc size ampules, box of 12	DECLAIM
2 cc size ampules, box of 25	TAUGHT
2 cc size ampules, box of 100	EMBALM
60 cc bottle, one	DISPEL
60 cc bottles, six	DOUBLET
60 cc bottles, twelve	DRAGON
60 cc bottles, twenty-five	THROUGH

Dosage

The initial doses may be 1 cc followed by 2 cc (0.1 to 0.2 grams of the salt) Injected in the gluteal muscles every 5 to 7 days A course should not exceed 3 grams Alternate courses with arsphenamine should be administered for a long period, as mentioned in reference to Breon Bismuth Emulsion

3. SACBIMUTH

A Water Soluble Bismuth Preparation

Sacbimuth is a neutral potassium bismuth saccharate in an aqueous sucrose solution One cc contains 0.05 Gms of the salt, equivalent to 0.025 Gms of elemental bismuth Saligenin is included as an analgesic against temporary distension of the tissues at the injection site Alkalinity of bismuth preparations is the common cause of pain following intramuscular administration Sacbimuth has the same hydrogen ion concentration as the tissues Discomfort following it is reduced to a minimum and there should be no induration of the tissues

There is no delay in absorption from the site of injection and such absorption is at a uniform rate Sacbimuth is distinct from many water soluble bismuths since in vitro it is compatible with blood serum That is, no precipitation occurs, but on the contrary the bismuth solution is miscible with the serum This suggests that Sacbimuth is readily carried through the circulation and is distributed throughout the body Studies on animals in fact show that Sacbimuth saturates the tissues Bismuth is found throughout the animal's organs within three days after an initial injection Yet seven days after injection but 6% of the bismuth has been excreted This indicates a tendency of Sacbimuth to linger within the blood and tissues which is in contrast to most water soluble bismuths

As has been said by Thompson and his associates ³ It is distinctly doubtful if very rapid absorption of bismuth is desirable because of its correspondingly quick excretion and accompanying liability to overburden the kidneys and liver

Upon administration of Sacbimuth the excretion of bismuth in the urine does not rise above 1 mg per day until 50 mgs have been injected, at no time during administration of recommended doses does the bismuth excreted amount to more than 2 mgs per day Therefore the concentration of bismuth in the excretory organs is at a moderate level at any given time which insures against nephritis and other tissue damage

It has been said by Irgang, Alexander, and Sala ⁴ that a favorable result is dependent not so much on the amount of bismuth as on the ability of its ions to disunite and combine with spirochetes to cause the latter's destruction Thus a small dose is as effective as a large one if the bismuth molecule is thoroughly dissociated into its constituent ions

Sacbimuth is Supplied

In 1 cc size ampules

Box of 12 ampules

Box of 25 ampules

Box of 100 ampules

Code Word

DUMPISH

TIMEFUI

EXCEL

In 30 cc rubber capped vials

Single vial

Box of six vials

Box of 25 vials

DUNGEON

DURABLE

TIMOROUS

Dosage

Injections made deeply in the gluteal muscles are begun with 1 cc given every three days After the fourth cc is administered the interval is increased to once weekly A full course while largely dependent on the condition and response of the individual, may be placed at 30 injections After a lapse of three or four weeks, the course may be repeated

1 Bull et mem Soc med des Hop de Paris, p 1369, Oct, 1934

2 Burke, E T, Arch Derm & Syph 32 404, 1935

3 Thompson, M R, et al, Am J Syph 17 205, 1933

4 Irgang, S, Alexander, E R, and Sala, A M, Arch Derm & Syph 28 320 Sept, 1933

CACODYLATES-STRYCHNINE-PHOSPHATE COMPOUND SOLUTION

Indications

"In convalescence from exhausting illness when anemia is present, strychnine is very useful, in association with iron and arsenic"

One cc contains

Iron cacodylate	0.016 Gm ($\frac{1}{4}$ gr)
Sodium cacodylate	0.049 Gm ($\frac{3}{4}$ gr)
Strychnine nitrate	0.006 Gm (1/100 gr)
Sodium glycerophosphate	0.13 Gm (2 grs)
Benzyl Alcohol	2%

Supplied

Code Word

1 cc size ampules, box of 12	DAMASK
1 cc size ampules, box of 25	CARRIED
1 cc size ampules, box of 100	EARTH

Dosage

Contents of one ampule given at two to four day intervals. Injected intramuscularly

CAFFEINE WITH SODIUM BENZOATE

Indications

A cardiac, cerebral and respiratory functional stimulant, a diuretic and muscle invigorator

Each two cc contain

Caffeine with sodium benzoate 0.5 Gm ($7\frac{3}{4}$ grs)

Physiological Action

In circulatory inadequacy, caffeine, a purine derivative, by stimulating the higher parts of the central nervous system, serves to reduce exhaustion, increase respiration, and in a variable degree increase the blood pressure. Through inciting the heart muscle, it tends to increase its tone and may improve the coronary circulation by directly dilating the vessels.

Contrarily, in susceptible persons, it may cause tachycardia, mental excitement, impair circulation by reducing diastolic relaxation.

Abram Blau found that the effect of Caffeine with Sodium Benzoate in reducing intracranial fluid pressure was greater and more consistent than that of dextrose, but with both dextrose and Caffeine the results were transient.

Supplied

2 cc size ampules, box of	12
2 cc size ampules, box of	25
2 cc size ampules, box of	100

Code Word

DAMPER
TARSUS
EASILY

Dosage

One-half to two cc given intramuscularly or subcutaneously. Its action continues for about two hours.

In circulatory failure it may be given intravenously as an emergency measure provided the injection is made very slowly.

THE PHYSIOLOGICAL ACTION OF CALCIUM

A real appreciation of the possibilities of calcium therapy can be had only through a realization of the many and seemingly unrelated body functions in which calcium has a part. The following brief survey of its more important activities may be of help to those who have not lately studied the physiology of this essential element.

Since calcium is a normal constituent of all cells, and all body fluids, it probably plays some part in all body functions. It is the vital actions and effects of calcium, however, which form a basis for logical calcium therapy. These have been adequately set forth by Cantarow.¹

Bone Formation

In normal bone, calcium is deposited mainly in the form of the tertiary phosphate and much less as the secondary carbonate. In addition to making the bones rigid this calcium is a depot for emergency calcium needs, as in pregnancy, lactation, and during periods of calcium starvation. The parathyroid glands, one of the regulators of calcium metabolism, act by withdrawing calcium from the bones when needed and permitting it to be deposited at the time of calcium surplus. This is probably done through a direct influence on the excretion of inorganic phosphorus. Injections of parathyroid extract cause an immediate and excessive increase in the excretion of inorganic phosphorus with a subsequent lowering in serum phosphate. Tertiary calcium phosphate is then

¹ Cantarow, A., *Calcium Metabolism and Calcium Therapy*, 2nd Ed., Lea and Febiger.

released from bone trabeculae to restore the lowered serum phosphate to near normal. The calcium phosphate and the preexisting serum calcium together bring the hypercalcemia that characterizes hyperparathyroidism.

Vitamin D, another regulator of calcium metabolism, operates in an entirely different manner. Presumably it aids the absorption of calcium and phosphorus, thereby furnishing the necessary ingredients for bone formation. This is of therapeutic importance in rickets, osteomalacia, pregnancy, lactation, and calcium and phosphorus starvation.

Cell Permeability

Cell function depends upon the ready exchange of certain foods, minerals, water, and waste products through the limiting cell membrane. Increase in the relative calcium concentration has been shown to decrease the permeability of the membrane, whereas a decrease in the relative concentration of calcium results in an increase of the permeability of this same cell membrane. Most of the ultimate cellular responses to calcium can be explained in terms of this change in cell permeability.

Cardiac Action

A decrease in the calcium content of Ringer's solution permits the perfused heart to lose much of its tone, the contractions become weaker, and the heart ultimately stops in diastole. Restoration of the original calcium concentration of the Ringer's solution produces a return of excitability, muscle tone, and rhythmic contractions. If the calcium content of the fluid spread through the heart is further increased, the contractions are more forceful, the muscle tone is increased, and the heart ultimately stops in systole.

Neuromuscular Irritability

Similarly, a decrease in calcium ions produces an increase in neuromuscular irritability, whereas an increase in calcium results in a decrease of neuromuscular irritability.

Direct application of calcium ions to the motor area of the cerebral cortex reduces the irritability of cortical cells and calcium precipitation results in an increase in irritability of these cells.

Blood Vessels and Capillary Permeability

As might be expected from observations on smooth muscle and cell permeability, calcium ions increase the tone of blood vessels.

and decrease the permeability of capillaries. Conversely, a decrease in calcium ions permits a loss in vascular tone and an increase in capillary permeability.

Water Balance

Calcium profoundly influences the exchange of water in the tissues. Calcium decreases the capacity of colloids to combine with water, decreases the permeability of capillaries, increases vascular tone, increases the tone of cardiac muscle, and as a sum of these influences, a powerful diuretic action is readily obtained in the presence of an excess of calcium ions.

Synergism

Calcium has been shown to be necessary in a certain optimal concentration to secure the physiological action of the secretion from the adrenal medulla. Failure to obtain a characteristic response following the injection of epinephrine implies a relative calcium deficiency. Conversely, an excess of calcium ions intensifies the action of epinephrine. This explains in some measure the adrenal-like action of calcium in adequate calcium therapy. For further facts on calcium physiology, the reader should consult Cantarow's excellent monograph.

CALCIUM THERAPY

In altering the action of the sympathetic nervous system, calcium performs the same general functions that are ascribed to epinephrine, ephedrine, and atropine. This is accomplished by disturbing the equilibrium existing between the craniosacral and the thoracolumbar autonomic nerves. The end result is one of inhibition of impulses from the craniosacral nerves and stimulation of impulses from the thoracolumbars. Calcium therapy is therefore of value in all vagotonias, i.e. those conditions characterized by increase of craniosacral autonomic tone, as well as those clinical entities in which there is a lowered thoracolumbar tone. Asthma, hay fever, angioneurotic edemas, urticaria, serum reactions, and other allergic conditions often show marked improvement under calcium therapy. In addition, this sympathomimetic action of calcium can be employed to advantage in certain other conditions not strictly dependent on increased craniosacral tone, such as mucous colitis, non-specific ulcerative colitis, tuberculous entero-colitis, lead colic, the night sweats of tuberculosis, hypotension, and ureteral colic.

Acute Hepatic Injury

The symptoms of acute hepatic injury are the result largely of the failure of the damaged liver properly to neutralize toxins arising within the intestines resulting from the digestion and putrefaction of protein. Such acute hepatic damage is seen in poisoning from chloroform, the arsenicals including the arsphenamines, phosphorus, certain aromatic organic compounds, cinchophen and its derivatives, acute and subacute yellow atrophy of the liver of pregnancy and the hepatic injury of eclampsia. Intensive calcium therapy is an effective method of combating these digestive toxemias and the distressing symptoms of cholemia that are always present. This happy result is due to a large extent to the sedative action of calcium on nerve cells, partly to the associated rise in blood sugar that accompanies intensive calcium therapy, and partly to the influence of calcium on guanidine intoxication.

As a Sedative

Calcium as a sedative is well known to the older members of the profession. In nerve debilities it was employed to advantage many years ago, although its full value was not appreciated because of inadequacy of dosage or more exactly because of failure of absorption. The factor of utilization through the intestines is now better understood. Also by employing the intravenous or intramuscular routes the uncertainties of dosage have been eliminated. Calcium is as efficient and not as toxic as the magnesium ion in the control of rabies, tetanus, eclampsia, strychnine poisoning, and obstinate meningeal symptoms.

In the Control of Edema

The most important of the factors responsible for effusion of fluid through the capillary walls into the intercellular spaces of connective tissue are the hydrogen ion concentration, the total salt concentration, and the relation that exists between the monovalent ions, sodium and potassium, and the divalent ions, calcium and magnesium. A relative decrease of divalent ions or a relative increase of monovalent ions causes an increased absorption of water by the tissue colloids and the outward symptom of edema.

Consequently, divalent ion therapy, i.e. calcium therapy, is a means of controlling edema from any cause as well as a specific for those conditions in which there is an actual depletion of divalent ions. Reviewing these general principles, it is not surprising

that a milk diet benefits nephritis with edema and it is easy to ascribe its efficacy to the calcium content of the milk. In most diseased conditions of the kidney there is a loss of serum protein. The non-diffusible fraction of blood calcium is carried in a loose combination with serum protein. The resulting edema may be overcome by restoring the depleted serum protein and its calcium. The edema of plasma removal responds in a similar way to increased calcium. Calcium is said to be a specific for "soda dropsy", a true monovalent ion poisoning.

Inflammatory edemas are modified by an excess of divalent ions which explains why calcium therapy is of value in epididymitis, salpingitis, cholangitis, and in many of the skin diseases characterized by edema.

Metastatic Calcification

Metastatic calcification is to be desired in tuberculosis, since this constitutes the only permanent defense against the infection. Tuberculosis is one of the important indications for calcium. In hypertrophic osteo-arthritis calcium therapy hastens the ultimate ankylosis and freedom from pain. In trichinosis it hastens the encapsulation of the parasite.

As an Antidote

Calcium therapy is of value in poisoning with oxalic acid, strychnine, arsenic, cocaine, lead, magnesium, mercury, and organic compounds with acute hepatic injury.

True Calcium Deficiencies

The giving of calcium together with vitamin D in rickets is a common measure. Infantile tetany may respond to calcium therapy alone or with an efficient parathyroid extract. Routine administration of calcium during pregnancy and lactation will prevent much of the damage to teeth and skeleton.

In Hemorrhage

The tendency of obstructive jaundice to predispose to hemorrhage is a condition that gives surgeons concern. Calcium injected previous to operation is often depended upon to correct the hemorrhagic situation. It is now thought that increased coagulability of the blood is not the primary reason that calcium stops the bleeding. The amount of calcium in the blood, even when below normal, is

enough for coagulation. An increase in blood sugar when bleeding is to be stopped is of more importance and it has been shown that calcium raises and maintains longer an increase in blood sugar. This and the decrease in the permeability of capillary walls induced by calcium are the means of preventing or correcting hemorrhages.

If this is true, the basis of calcium administration in hemorrhage is to correct a vascular defect and thus to prevent the blood from percolating the vessel walls.

Calcium and Digitalis— a Recommendation and a Warning

As a heart tonic Singer considered calcium to be the "whip and the bridle of digitalis." He found that calcium increased and quickened the effect of digitalis on the heart and, if continued for long, it lessened the by-effects of digitalis on the parasympathetic nervous system.

Another advocate of conjoint calcium and digitalis therapy was Billigheimer who noted that calcium alone, injected intravenously, promptly slowed the heart rate and maintained it at the low point for 25 to 30 minutes. When calcium was given to patients previously receiving digitalis, the slower heart rate continued for four to five hours.

Calcium nevertheless should be injected with caution or not at all in patients who are digitalized. There is an additive effect upon heart action, which has caused fatalities. The same violent action does not occur when calcium treatment precedes digitalization. The different effect may be explained by the persistence of digitalis action or by the lessened cell permeability induced by calcium, which permits the heart muscle to take up only small amounts of subsequent digitalis or by a combination of the two reasons.

Reactions

Following an injection of a calcium salt intravenously, the surface areas of the sacral region, the abdomen, and sometimes the face are warmed and flushed because of dilatation of the vessels. The dilatation is also evidenced by a lowering of the systolic blood pressure. Initially there is slowing of the heart rate due to stimulation of the vagus nerve of the parasympathetic system, but soon this is changed to a more lasting stimulation of the sympathetics. Thus calcium intravenously in end results a sympathetic stimulant and a tonic to heart muscle.

Administration

By Mouth

The dosage and mode of giving of calcium depends on convenience, on the severity of symptoms, and the acute character of the disease, as in other types of therapeutics. Moderate calcium effects can be obtained by the peroral route if given at a time when high alkaline content of the intestines does not prevent absorption of the drug. It should therefore be given four hours after, and not nearer than 30 minutes before meals. It may be accompanied by 5 grams of ammonium chloride to each 15 grams of the calcium salt. The acid medium produced by the ammonium chloride increases the absorption and more completely ionizes the calcium after absorption.

Hypodermic Administration

The older calcium salts cannot be injected in the tissues without causing inflammation and later possible necrosis. But the advent of Calcium Gluconate 10% made possible subcutaneous and intramuscular injections. This has given an impetus to the use of the drug since the calcium effect that results is definite and seemingly as persistent as after peroral use.

Ten cc of a 10% solution of Calcium Gluconate given in the muscles brings a rise in serum calcium of 3 to 4 mg above normal within 20 minutes. This gradually subsides to normal in six to eight hours.

Calcium Gluconate 10%-Breon especially adapted to intramuscular injection is described on later pages.

Intravenous Administration

For acute conditions demanding immediate relief the intravenous route is to be preferred. Examples are spasms of smooth muscles, as in biliary and ureteral colic, arsphenamine reactions, the control of pain and swelling in epididymitis, allergy, and in hemorrhage. The rate of injection intravenously is of prime importance. If given as slowly as 0.5 cc per minute, nine to twelve times as much calcium can be given before disturbing the heart action as when injected at the rate of 60 cc per minute.

Calcium solutions for intravenous injection, including Calcium Glucosan and Calcium Gluconate 20 %, are described on later pages.

Summary of Physiological Action of Calcium in its Indications

Disease or Clinical Condition	Calcium Effect
Asthma, bronchial	Produces effects in accord with stimulation of sympathetic nerves of the involuntary system
Colic, lead	
mercuric	
ureteral	
Colitis, nonspecific, mucous	
ulcerative	
specific, due to dysentery	
tuberculous due to	
typhoid	
Eczema, allergic	
Edema, angioneurotic	Acts as a diuretic
Hay Fever	
Hemorrhagic diathesis	
Jaundice	
Serum Sickness	
Urticaria	
Edema, hemorrhage with	
nutritional	
postoperative	
Nephrosis	
Soda dropsy	Neutralizes toxins arising within the intestines, e.g. guanidine, to raise blood sugar
Atrophy, acute yellow	
Felampsia	Supplies deficiency of calcium
Pregnancy and Parturition	
Rickets	
Tetany	Modifies inflammatory edema
Cholangitis	
Epididymitis	
Salpingitis	Effects metastatic calcification
Arthritis	
Gichtosis	
Tuberculosis	Acts as a sedative
Poisoning, cocaine	
strychnine	Is an antidote
Poisoning, oxalic acid	
Heart disease	Is a diuretic and cardiac tonic

CALCIUM CACODYLATE

Indications

A tonic in certain deficiency diseases and in functional neuroses accompanying anemia. It fills a need in some debilitating conditions that benefit from mild calcium and arsenic therapy. It has been used extensively as an adjunct in the treatment of tuberculosis.

Supplied

In 2 cc ampules containing 0.19 Gm (3 grs) calcium cacodylate which consists of approximately 12% calcium and 46% arsenic.

2 cc size ampules, box of 12
2 cc size ampules, box of 25
2 cc size ampules, box of 100

Code Word

DISCOVER
TENDERLY
EQUIP

Dosage

Contents of one ampule injected deeply intramuscularly twice weekly.

CALCIUM CHLORIDE

The indications and contraindications for, and the physiological actions of calcium, as described in the preceding pages, apply to this salt.

The chloride is one of the older forms of calcium. It contains more elemental calcium than others in use and therefore requires less volume, but is more toxic. It is suited only to intravenous injection and all of the solution must be placed within the lumen of the vein to avoid pain and possible necrosis.

The conditions and doses mentioned hereafter illustrate the application of this solution.

Description

A sterile solution of Calcium Chloride (reagent quality) for intravenous use, carefully prepared by accurate laboratory procedure.

Each 5 cc contains 0.26 Gm (4 grs) Calcium Chloride, approximately a 5% solution.

Each 10 cc contains 1 Gm (15½ grs) Calcium Chloride, a 10% solution.

*Supplied**Code Word*

10 cc size ampules, box of 6	ABUTMENT
10 cc size ampules, box of 25	BALCONY
10 cc size ampules, box of 100	CHARITY
5 cc size ampules, box of 6	ABUSE
5 cc size ampules, box of 25	BAILIFF
5 cc size ampules, per 100	CHARADE

Therapeutic Notes with Dosage and Interval

ALLERGIC REACTIONS

of all types are usually controlled by calcium chloride One injection of 10 cc is sufficient

CHOLECYSTITIS

Machline and his associates cite a simple method of treating chronic cholecystitis in which the bacteriostatic effect of methenamine is associated with the stimulation of biliary output by the action of calcium on the vagosympathetic nerves ¹

Dosage

25 cc each of Calcium Chloride 10% and Methenamine 40% are drawn into a syringe and administered intravenously Injections are given daily and the amount of solution increased until 10 cc of each drug are being given

EPIDIDYMITIS

The response of epididymitis, (both gonorrheal and non-specific) to calcium chloride intravenously is noteworthy When given in the evening, the patient frequently has a night's rest free from pain and goes to his work in the morning without loss of time from his vocation The effect is thought to be due to tissue changes

Two series of cases are cited by Rupel, ² both treated alike except the first received no injections of Calcium, while the second series did The first, a group of 50, were confined to their beds for an average of 45 days each Those receiving the injections of Calcium Chloride were up in an average of 145 days, not including those in bed but overnight

Twenty-two percent of Rupel's second series of 28 cases were given but one dose. The average number of injections per patient was 2.2

There is a tendency toward recurrence of epididymitis and to guard against this it is advisable to continue the injections to the number of four or five

Dosage

The initial injection should be one-half the contents of a 10 cc ampule. If additional injections are given, they may be the full 10 cc content. Injections are made daily

HEMOPTYSIS

Calcium Chloride intravenously in treating hemorrhage from the lungs has been found effective

Dosage

5 to 10 cc of the 10% solution from 2 to 5 times a day, satisfactory results are usually obtained during the first 24 hours

In severe cases 5 cc of a 10% solution are given daily for 3 or 4 weeks

MAGNESIUM AND OXALIC ACID POISONING

Effects following the administration of Magnesium Sulfate beyond the tolerance point and accidental oxalic acid poisoning are physiologically combatted by the use of Calcium Chloride intravenously

Dosage

4 to 15½ grains injected intravenously as required

TETANY

Dosage

5 cc of a 5% solution to 10 cc of a 10% solution every 6 to 8 hours until symptoms are relieved, then daily for several days

1 Machiline, E., Grigorenco, V., and Gorbuncova, Presse Med. 43 1708, 1936

2 Rupel, E., Am. J. Med. Sci. 176 399, 1928

CALCIUM GLUCONATE

(Preparation licensed under U S Pat 1,965,535)

Indications

The many conditions in which calcium given intravenously or intramuscularly is desirable

Advantages

Calcium Gluconate is the one form of calcium to date that may be injected other than in small amount in the muscles without irritation or possible necrosis of tissue. When 10 cc of a 10% solution are injected, a rise in serum calcium of 3 to 4 mg occurs within 20 minutes, according to Podolsky. A gradual decline then ensues with a return to the normal calcium level in 6 to 8 hours.

Calcium Gluconate is non-irritating and in the 10% solution is comparatively non-toxic even if injected rapidly. But these qualities have been obtained at some sacrifice of the quantity of elemental calcium carried.

Description

Ten cc of the 10% solution represent approximately 0.09 Gm elemental calcium. The solution is stabilized with calcium d-saccharate 0.2%.

Supplied

10% Solution

may be injected intramuscularly or intravenously, but is more rational for intramuscular use because of the satisfactory absorption by this easier applied route.

Code Word

10 cc size ampules, box of 6

ALIAN

10 cc size ampules, box of 25

BILKING

10 cc size ampules, per 100

CALICO

20% solution

may be injected intravenously or intramuscularly but is better adapted to intravenous use because the greater concentration as well as volume is less well received in the muscles.

Code Word

10 cc size ampules, box of 6

DRENCH

10 cc size ampules, box of 25

ILLING

10 cc size ampules, per 100

LULOGY

CALCIUM GLUCOSAN

Indications

Where vigorous calcium medication is required and intravenous administration is practicable. Conditions that frequently call for Calcium Glucosan are tuberculosis, anaphylactic shock, and hemorrhage.

Description

Calcium Glucosan is an anhydrous dextrose from which one molecule of water has been removed from the chemical structure combined with calcium hydroxide to form a definite chemical compound. 30 cc contain 0.55 Gm (8.44 grs) elemental calcium. Chlorbutanol 0.5% is included as a preservative. The word, "Glucosan" applies to a substance obtained by splitting off an amount of intramolecular water from glucose. After this action the material is no longer glucose and, incidentally, Stedman says it may be utilized by diabetics without increasing hyperglycemia.

For comparison it may be said that the customary dose of 10 cc Calcium Gluconate 10% contains the equivalent of 0.09 Gm of calcium and 10 cc Calcium Chloride 10% carries 0.27 Gm of calcium. To make a comparison on the basis of calcium *salt* content, Calcium Glucosan contains in 30 cc the equivalent of 2 Gms of calcium chloride.

Advantages

Calcium Glucosan makes it possible to give intravenous calcium in substantial amount, in a form less toxic and that is tolerated to about twice the quantity of calcium chloride. It is also less irritating if some of the solution is accidentally injected outside the vein. The 30 cc rubber capped vials permit beginning treatment with small doses and increasing in graduated doses, without waste of solution.

The information on the physiological action contained in preceding pages applies to the use of this product.

Supplied

Code Word

30 cc size vials, one vial	ANGELIC
30 cc size vials, box of 6	ALBUM
30 cc size vials, box of 25	BEYOND
30 cc size vials, per 100	CABOOSE

In rubber stoppered vials to permit the giving of gradually increased doses.

Dosage

Calcium Glucosan is for injection in the vein only. Its administration in certain prevalent conditions is covered in succeeding pages. In the absence of mention of a definite disease, it may be considered that ten to twenty cc daily with the interval gradually lengthened is moderately intensive calcium therapy.

To obtain profound sedative effects such as required in eclampsia and strychnine poisoning, injections may be made as often as every six to twelve hours but blood calcium should not at any time be raised above 15 mg per 100 cc of blood serum.

ASTHMA AND OTHER ALLERGIC CONDITIONS

Pottenger¹ has stated "Since we know calcium to be an integral part of the cellular structure and that it is necessary to sympathetic nerve action, we have a basis for its use founded on rational biologic principles. Calcium increases sympathetic action in the neuromuscular mechanism of the bronchi, vagus action is depressed or inhibited, and if the action is sufficiently strong, the asthmatic paroxysm is relieved." The same author states that in bronchial asthma he noted intravenous administration of calcium relieved both the bronchial spasm as well as bronchial secretions. He further observes that the explanation given above also shows how calcium exerts its beneficial effects in tuberculosis of the intestines and in hay fever.

Dosage

The initial injection should consist of 10 cc of Calcium Glucosan. If well tolerated 20 cc may be given the following day and every day thereafter for a prolonged period with gradually lengthened intervals.

CONVULSIVE STATES

Calcium Glucosan intravenously brings symptomatic relief 15 to 20 minutes after injection in eclamptic and pre-eclamptic cases. Other convulsive conditions responding to similar treatment are tetanus, obstinate meningeal symptoms and the neuromuscular irritability of uremia.

Dosage

10 to 20 cc repeated in 4 to 8 hours

EDEMA, INFLAMMATORY

Calcium tends to decrease the permeability of cells. For this reason, it is used to reduce inflammatory tissue swelling. It has

also been said that calcium intake causes urinary excretion of the sodium in the blood and prevents it from passing into the inflamed area. As the water follows sodium, the effusion which otherwise would enter the edematous process is stopped. Resorption of the fluid and cessation of fever is then observed. Early treatment is more successful.

Dosage

Calcium Glucosan may be given in serofibrinous pleurisy, peritoneal effusions and other inflammatory processes in injections of 30 cc. A salt-free diet is desirable. 30 cc given at three to four day intervals are used to prevent pleural effusions after artificial pneumothorax.

EDEMA, NON-INFLAMMATORY

Non-inflammatory edema including renal and cardiac dysfunctions responds also to calcium therapy. Its action in these conditions is variously explained. It has been shown that calcium administration is followed by an increased urinary elimination of sodium, ammonia, chlorides, water and total acid. In this diuresis, doubtless much of the reason for benefit in non-inflammatory edema lies

Calcium Glucosan intravenously when practicable is the most effective calcium therapy in acute and chronic nephritis, other nephroses, diabetic edema and ascites.

Dosage

20 cc may be given once or twice daily.

EPIDIDYMITIS

Both gonorrheal and non-specific epididymitis respond to Calcium Glucosan intravenously. Cessation of pain and inflammation follow one 20 cc injection. One or two additional injections should be given to prevent recurrence.

ACUTE LIVER INJURY

Intensive calcium intake is said to be the most efficient way to combat the distresses that result from toxins arising in the intestines due to the deficient digestion of proteins because of a damaged liver. With the failure of the injured liver to neutralize these toxins, putrefaction of protein follows.

The benefit of calcium is brought partly by the presence of the calcium in itself, partly by its sedative action, and partly by the rise in blood sugar that accompanies the calcium action.

Dosage

20 cc of Calcium Glucosan may be given at four to eight hour intervals Dextrose should also be given intravenously in quantities of 100 cc of 25% solution This may be injected for convenience just after the calcium and through the same needle

In obstructive jaundice, 10 cc Calcium Glucosan are given daily for three days before operation Dextrose is also administered as mentioned above

PERISTALTIC PAIN, DUE TO LEAD, URETERAL OR BILIARY COLIC

It was assumed the relief from the intense abdominal pain of lead poisoning that calcium brings was attributable to the removal of the lead from the organs to the long bones But Bauer, Salter and Aub have carried the measure further in giving calcium chloride intravenously and obtained the same immediate cessation of acute spasms of smooth muscles when due to other causes, such as ureteral and gall-stone colic Moreover, the relief is so prompt, sometimes occurring before completion of the injection, that, even when the cause is lead, it must be due to an action other than quickened storage of the metal in the bones

Dosage

15 to 20 cc intravenously When the patient is quiet, magnesium sulfate may be given as a cathartic to clear the intestines of toxins If the pain recurs, the injection of Calcium Glucosan may be repeated in three or four hours

TUBERCULOSIS

The familiar reason given for the administration of calcium in pulmonary tuberculosis is to calcify or "wall off" the lesions, or according to the theory of Beasley, to create a localized alkalinity which is inimical to the tubercle bacillus with its fatty acid capsule It is now said that the lesion is not directly influenced by hypercalcemia Whatever the means, pulmonary, bone and especially intestinal tuberculosis are unmistakably benefited

Beasley,² an early advocate of calcium in tuberculosis, says "It has been shown that many of the most distinguished workers in the field of phthisiotherapy, both in this country and abroad have become interested in the administration of calcium in the treatment of tuberculosis, and in not a single instance has there been reported unfavorable results On the contrary, each has observed good results following its use"

Dosage

The initial injection should be limited to 10 cc of the solution. If well tolerated, the 20 cc remaining in the vial are given the following day. Subsequently 30 cc of the solution may be administered daily.

In tuberculosis a minimum of twelve injections should be given and after a recess of two weeks the course is repeated.

The injections are preferably given in the morning. They are made with the patient lying down, and he should remain so for 15 or 20 minutes afterwards. As much as a minute should be devoted to the placing of each 3 cc in the vein. This may be accomplished by injecting that quantity as slowly as possible, if the time is not consumed, pause before proceeding.

1 Pottenger, F. M., Am J Med Sci, Feb, 1924

2 Beasley, Thos. J., J Ind St Med Assn 19 24, 1926



ONLY FLAWLESS FUSION OF THE GLASS OF THE AMPULE-TIP WILL GUARD
STERILE SOLUTIONS

CAMPBOR IN OLIVE OIL

Indications

A diffusible stimulant used to strengthen heart action and to counteract nervous depression Given in pneumonia, typhoid fever and in acute septic affections such as diffuse peritonitis

Contraindications

There is some evidence that large doses or prolonged administration of camphor should not be given in grave disturbances of the liver, in diabetes, and severe septicemia

Description

Each 1 cc contains 0.19 Gm (3 grs) camphor

The drug for intramuscular injection is frequently supplied dissolved in cotton seed oil Breon ampules of camphor include olive oil as a vehicle because of its acknowledged absorptive advantages

Physiological Action

Camphor is oxidized in the body to camphoral and excreted in conjunction with glycuronic acid Its action is mainly on the circulatory system and is rapid but brief Camphor is ranked higher by clinicians than by pharmacologists The latter incline to the belief that in the usual dose its effects on respiration and circulation are inconstant

The rise in blood pressure brought by epinephrine can be prolonged by an injection of camphor This is probably due to camphor decreasing the permeability of the vessels and so retaining the epinephrine in the blood stream longer

Supplied

- 1 cc size ampules, box of 12
- 1 cc size ampules, box of 25
- 1 cc size ampules, box of 100

Code Word

DAINTY
TENANT
EARNEST

Dosage

One to two cc every two to four hours In extreme cases in the adult, 10 cc has been given at a dose and repeated in twelve hours Large doses should not be given in starved states or in cases of disturbed carbohydrate metabolism

Therapeutic Notes

For the suppression of lactation, as after stillbirths and when the infant is weaned, Camphor in Oil injections have been found more effective and simpler than other means, such as binders, ice

bags, and fluid restriction. In about 80% of cases breast engorgement is controlled in two to three days. 0.3 Gm (3 grs) are injected in the gluteal muscles twice the first day and 0.1 Gm daily on succeeding three days. Injections should be started on the first day after delivery when possible.

CINCOSAL

Indications

For the reduction of fever and swelling of joints and the overcoming of pain in acute muscular and articular rheumatic fever, neuritis, and gouty arthritis.

Contraindications

Syphilis, nephritis, chronic alcoholism, and pregnancy, liver dysfunctions and susceptibility to cinchophen as described below under "Therapeutic Notes."

In view of the hypersusceptibility of some individuals to cinchophen, we suggest that patients receiving Cincosal be kept under continued supervision and that the medication be stopped promptly if any evidence of hepatitis appears.

Advantages

The desirability of Cincosal is due to its unapproached ability to vanquish those diseases of rheumatic nature that are characterized by extreme pain.

Hanzlik says ¹ "Probably the most striking clinical action of salicyl and cinchophen is the prompt and complete relief of all the symptoms of rheumatic fever. This includes the fever, the immobility of, and the pain, redness, swelling and effusions in the joints, the general discomfort, and the accelerated pulse and respiration. The efficiency of salicyl is so good that some have regarded it as a diagnostic and specific agent for this condition. Curiously enough cinchophen has not been so regarded, though there is no reason to believe that it acts differently from salicyl." Cincosal, given intravenously, is carried to and acts directly upon the foci of infections. Even though the location of the infection use of Cincosal is a distinct advantage. A series of injections may give complete relief and make it unnecessary to operate. On the other hand, after the clearing up of the original site of infection, is known, and it is deemed desirable to operate to remove it, the it is quite possible that the toxins which have been disseminated through the system will have to have their elimination forced before recovery is obtained.

Description

20 cc contain

Sodium Cinchophenate	10 Gm (15½ grs)
Sodium Salicylate	10 Gm (15½ grs)
Sodium Iodide	05 Gm (7¾ grs)

The 20 cc dose is for the average to severe or stubborn cases

Cincosal 10 cc contains just one-half the above amount of drugs

It is suitable for use in the mild case or where there is a limited tolerance for the drugs

Physiological Action

Stimulator of uric acid excretion, antipyretic and analgesic, Cincosal increases the capacity of the kidneys to eliminate uric acid and simultaneously decreases the uric acid in the blood. Sometimes the amount of uric acid excreted is doubled under the treatment, and this without a corresponding increase in the amount of urea.

Experimental studies of the action of cinchophen on the nitrogenous exchange show that, in addition to the excretion of uric acid, the drug brings an increased urinary excretion of total nitrogen, total sulfur, and allantoin. This excretion like that from the salicylates is due to a direct action on the kidneys and suggests the extent of the elimination of toxic wastes.

The amount of bile secreted is distinctly increased after cinchophen, this increase being noted in the contents of the duodenum of both healthy persons and those with catarrhal jaundice.

Sweating usually occurs, and in the presence of febrile conditions may be quite marked.

The prompt lowering of fever is accomplished undoubtedly through dilatation of the peripheral vessels, including those of the skin, and also through the mechanism of sweating.

Supplied

20 cc size ampules, box of 6
20 cc size ampules, box of 25
20 cc size ampules, per 100
10 cc size ampules, box of 6
10 cc size ampules, box of 25
10 cc size ampules, per 100

Code Word

ABUNDANT
BAGGAGE
CHAPTER
ABSURD
BAFFLE
CHAPEL

Dosage

10 cc are given as the initial injection followed in 24 hours

by 20 cc The 20 cc dose is usually repeated at two to four day intervals and is the therapeutic dose for the larger number of adults.

Cinchophen was given with food to rats by Furth and Edel² to determine the uric acid excretion from the liver It was found that maximum excretion occurred with about 0.01 gram of the drug per kilo of animal weight This corresponds to a dose of 0.7 gram for a person of 156 lbs The 0.5 gram of cinchophen administered in 20 cc of Cincosal intravenously is seen to be adequate to force uric acid elimination, since it also makes the kidneys more permeable to the acid

Therapeutic Notes

About 50,000 injections of Cincosal a year have been made since its introduction in 1927 It has an exceptionally clear record of good results with no definitely shown untoward effects occurring However, there has been accumulated a substantial number of cases of fatal liver damage attributed to cinchophen or its derivatives, one of which is an important constituent of Cincosal

The first visible symptom of liver poisoning is likely to be loss of appetite, drowsiness, jaundice, followed by skin eruptions, stomach and intestinal disturbances, and general malaise These may appear soon after taking of the drug or may be delayed

Dextrose is given intravenously, by mouth, or rectal drip in large amounts in the treatment of liver dysfunction following the administration of cinchophen Insulin, 5 to 10 units, three times a day may be administered Proteins in the diet are restricted

The Indictment

Acute yellow atrophy of the liver has occurred in some persons after small doses for but a few days as well as after extended dosage of cinchophen A formidable total of fatalities is charged to the drug The opinion has been advanced that cinchophen intoxication is due to a specific sensitivity This is manifested by an allergic reaction localized as an inflammatory necrosis in the liver (Arthus phenomenon) Predisposing factors appear to be chronic liver and gall bladder dysfunctions, syphilis, nephritis, chronic alcoholism and allergic sensitization

The Defense

Numerous clinical and controlled experimental studies have shown no specific toxic action upon the liver from cinchophen

To the contrary, favorable effects in the *treatment* of subacute atrophy of the liver and jaundice were recorded by Brugsch ³ Lichtman ⁴ went further and in the presence of severe damage to the liver gave repeated doses of cinchophen 0.45 gram without apparent toxicity. In dogs aspirin is twice as toxic as cinchophen by mouth, according to Barbour and Lozinsky ⁵ after experimentation at McGill University.

Barbour and Gilman ⁶ fed 36 rats in different groups from 100 mg to 400 mg of cinchophen per kilo for two weeks. The animals continued to grow and remained in excellent condition. Upon excision, the livers showed no damage in any case. In another series the liver susceptibility was increased by placing the animals on a starvation diet with large amounts of fat and sodium cinchophen given in 20% alcohol. Rats receiving 500 mg and others 750 mg of the drug per kilo daily for 2 weeks survived and showed no liver damage. One of four animals receiving 1000 mg died in four days and those ingesting 1500 to 3000 mg per kilo all died in two to six days. All the rats receiving more than 1000 mg showed definite growth impairment.

Six thousand intravenous injections of a combination including cinchophen 7½ grains have been given by Eaton without harm. Some of these patients were receiving the drug by mouth during the same time.

In May, 1936, Snyder and his associates surveyed the history and reported on the use of cinchophen in the treatment of chronic arthritis ⁷. After acknowledging the place of other means including rest, diet, and removal of infection, they state that drugs have not recently received the attention they deserve. They believe this may be due to (1) the use of minimal doses whereas the amount should be gradually increased to the limit of tolerance, (2) medication is not sufficiently persistent, (3) the impression that the relief obtained is merely an analgesia and failure to follow up on the benefit from stimulation of the kidneys and liver to increased output of nitrogenous waste products of metabolism, and (4) cinchophen, our most important drug, has been too hastily condemned because of reports which seem to indicate that it and its derivatives are toxic because many deaths from acute yellow atrophy have been attributed to its use. The authors have continued to use cinchophen in chronic arthritis for ten years in cases totalling 2560 and have never seen a case of jaundice from its use.

The records of 131 cases of poisoning attributed to cinchophen in the twenty years from 1913 to 1933 were analyzed by Snyder and his co-workers. They threw out 96 of these cases either because paucity of evidence interfered with positive conclusions or because the toxic symptoms were limited to urticaria. This, although unpleasant, is not to be classed with jaundice or more serious symptoms.

Of 35 cases coming to autopsy, eight were due to typical cirrhosis of the liver, and two followed surgery. Seven were accompanied by other etiologic causes which could be responsible for the liver pathology, e.g. abscesses of liver and lungs, history of eclampsia, antipneumococcic serum reaction, and syphilis. Eighteen cases, or 13% of the total 131, were left in which cinchophen had been received and in which concurrent disease could not have been the cause of acute yellow atrophy that occurred.

These investigators then point out that the condition is seen in patients who have never received cinchophen. In the state of New York there were 712 deaths from acute yellow atrophy in 7,174,572 hospital admissions.

In eight years previous to 1933 there were made in the United States about 660,000 pounds of cinchophen, which may be estimated as about 660 million doses of $7\frac{1}{2}$ grains. In the same time and territory there were 38 deaths reported as due to the drug. This indicates a ratio of fatalities to total doses of 1 to 17 million.

Snyder and his associates sum up their investigations with the comment: "Cinchophen is not a harmless drug, but is a very effective one and when used with proper care and reasonable precautions, its benefits far outweigh its limitations."

An authoritative medical journal replied⁸ to an inquiry about the toxicity of cinchophen that when prescribed with proper precautions no more liability is incurred in prescribing it than any other potent agent.

1 Hanzlik, P. J., *Medicine* 5 333, 1926

2 Furth, Otto and Edel, Emil, *J. Pharm. & Exp. Ther.* 53 105, 1935

3 Brugsch, T., *Ther. d. Gegenw.* 1 14, 1928

4 Lichtman, S. S., *Arch. Int. Med.* 48 98, 1931

5 Barbour, H. G. and Lozinsky, E., *J. Lab. & Clin. Med.* 8 217, 1923

6 Barbour, H. G. and Gilman, A., *J. Pharm. & Exp. Ther.* 55 400, 1935

7 Snyder, R. G., Traeger, C. H., Zoll, C. A., Kelly, L. C. and Lust, F. J., *J. Lab. & Clin. Med.* 21 541, 1936

8 *J. A. M. A.* 104 1444, 1935

DEXTROSE 50% SOLUTION (d-Glucose)

Indications

The general physiologic uses of dextrose administration are to raise low carbohydrate metabolism, to increase deficient blood sugar, to counteract ketosis, to correct an exhaustion of muscle and liver glycogen, and to induce diuresis.

More definite pathologic indications consequent to the above physiologic effects are acute systemic infections and intoxications, especially when the liver and the heart muscle are affected, in starvation, as prophylaxis against surgical complications and post-operative and other shocks. In pulmonary edema and acute nephritis with edema, hypertonic solutions are indicated, to mitigate blood and fluid losses isotonic solutions are required.

Contraindications

For the general debility accompanying certain heart and vascular diseases it is futile and may be dangerous to give dextrose in the amount usually necessary to bring a distinct improvement of body nutrition. Neither is the solution indicated in pneumonia, diphtheria and sepsis. It is considered that the poisons of these diseases are colloidal in nature and non-diffusible. They cannot, consequently, be neutralized and excreted by the intervention of dextrose.

Description

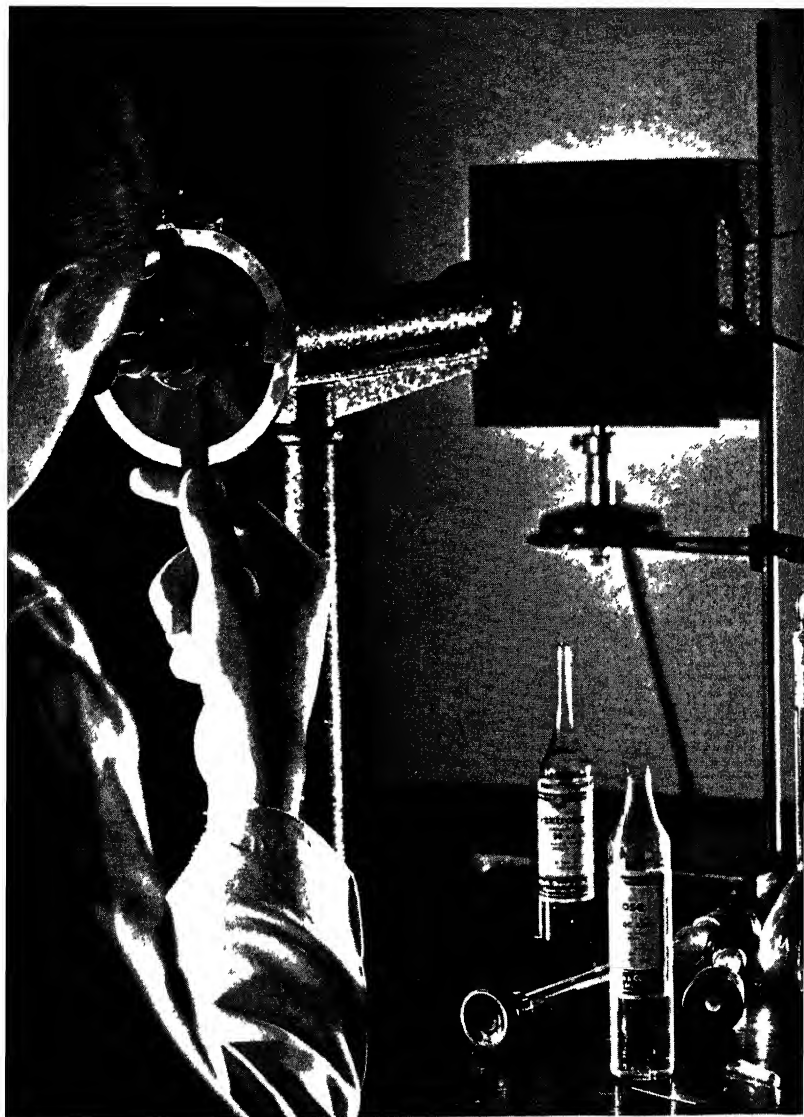
Dextrose, or d-glucose, is the natural sugar of the blood. Dextrose-Breon is a 50% solution of dextrose especially purified for intravenous injection. No buffer or preservative is included in our regular ampule, since chemical tests show that solutions of chemically pure, anhydrous dextrose in sterile, redistilled water are substantially free from acidic impurities. However, dextrose solution with buffer will be supplied if requested.

20 cc contain 10 grams, 50 cc contain 25 grams, and 100 cc contain 50 grams dextrose (hydrous) USP.

The 50 cc and 100 cc sizes are furnished in ampules with a tip at each end. This speeds up the emptying of ampules and is an advantage when many are used.

Physiological Action

A food for instant assimilation by the tissues of the body when injected intravenously, a diuretic of the first order, in concentrated



THE POLARISCOPE serves in the rapid and accurate assay of dextrose solutions and in the identification and estimation of other medicinal substances

form a tissue dehydrant— a stimulant to the mechanism of cell metabolism

When the available supply of dextrose in the body runs low, due to carbohydrate starvation, wasting disease, or other causes, the body begins to burn its own fats. As fats can only be completely burned in the fire of carbohydrates the products of incomplete fat metabolism, the ketone bodies— diacetic acids— appear in the blood. The carbon dioxide combining power of the body fluids decreases and we have a condition of ketosis. The importance of dextrose arises here, for it is the only known food substance which can be administered directly into the veins and can be immediately utilized by the heart muscle and other body tissues.

The water-balance mechanism of the body under usual and some unusual circumstances will maintain the blood volume within normal figures. Yet, under stress it may become necessary for clinician and surgeon to aid the system in correcting the balance. This often consists in supplying a deficiency of fluid accompanied by chemicals of which dextrose is of most importance and value.

Supplied

In Double Tip Ampules

	<i>Code Word</i>
100 cc size ampules, per 6	ALCHEMY
100 cc size ampules, per 25	BIBLE
100 cc size ampules, per 100	CABBAGE
50 cc size ampules, per 6	ACQUIRE
55 cc size ampules, per 25	BASHFUL
50 cc size ampules, per 100	CONFUSE

In Single Tip (Flat Bottom) Ampules

This dextrose solution is of the same highest purity as that described above. The glass composing the ampules is the best chemically resistant glass obtainable, which has always distinguished Breon sterile solutions. The difference is that these ampules have a tip at one end only and a flat bottom at the other.

	<i>Code Word</i>
50 cc size ampules, box of 6	ANCESTOR
50 cc size ampules, box of 25	BONFIRE
50 cc size ampules, per 100	CANARY

20 cc size ampules, box of 6	ACQUAINI
20 cc size ampules, box of 25	BARRACKS
20 cc size ampules, per 100	CHOOSE

The Route of Administration

If the patient is able to take dextrose via the mouth and alimentary canal and if time for assimilation is available, that normal route will be utilized. Proctoclysis has been tried and found wanting because little dextrose is absorbed from the rectum and if the concentration is more than 5% little water. Some patients are unable to retain the solution by this means.

Hypodermoclysis (Subcutaneous Infusion)

If necessary, dextrose solution usually may be given by subcutaneous infusion. With the present technique the pain of such administration is reduced. The needle should not be placed under the breast, as was the former practice. The first choice of site is the thighs. Here a 19 gauge, $2\frac{1}{2}$ inch needle may be inserted in the median or lateral aspect of a thigh, pointing toward the patient's head. The axillary region is also suitable, especially for children. The needle, pointing toward the apex of the axilla, is entered in the mid-axillary line at about the sixth rib. It is placed in the loose tissues below the large vessels.

The insertion of the needle can be made quite painless by the use of procaine hydrochloride. After sterilizing the area, 5 to 10 minims of the anesthetic solution can be injected intradermally through a fine needle at the point selected for the insertion of the hypodermoclysis needle.

Dosage and Rate of Injection by Subcutaneous Infusion

The temperature of the solution should be uniformly regulated to about 95°F—slightly less than that of the body. The rate of injection should be slow enough to avoid severe distention of the subcutaneous tissues. The rate and the quantity must be carefully gauged to the capacity of the individual patient or there is risk of overburdening the heart and causing lung edema.

Dextrose alone may be given subcutaneously in a 5% (isotonic) solution or it may be combined in equal parts with Ringer's or lactate-Ringer's solution.

The amount given by this route is variable 500 to 1000 cc is customarily administered at one treatment, but others, believing the rate to be the important thing, give much more over a long period

Phleboclysis (Intravenous Injection)

Dosage and Rate of Injection

For practical purposes, when injected at the properly slow rate, 75 grams may be given to the average patient as the initial dose and 50 grams in subsequent doses Three 50 cc size ampules are diluted with an equal quantity of pure distilled water to make 75 grams, or a 25% solution of 300 cc A 25% solution is generally preferred unless fluid is required for its own sake The hypertonic solution also appears to be more readily utilized by the body tissues with resulting promptness in neutralizing toxins and reduction of edema

Intravenously, however, dextrose is given in concentrations of 5% to 50% It may be administered in small volume as an ordinary intravenous injection, with the usual intravenous technic and precautions In fact, there is a tendency to reduce the amount of fluid, as stated by Gorrel ¹

"Despite the advocacy of continuous dextrose administration, some observers including ourselves believe that single intravenous doses repeated one to three times daily are preferable to prolonged injection, which stimulates to increased insulin formation and upset body chemistry, local phlebitis, and overloading of the cardiovascular system with fluids"

Yet as dextrose is routinely given by gravity in slow infusion of more or less dilute solutions, the dosage of that technic is described here

The average dose is from 0.85 to 1 gram per kilogram of body weight The blood sugar may be kept at an average of 100 mg per 100 cc, with a variation between 80 and 120 mg being within normal range

In marked dehydration, a very weak solution may be administered in large volume If, on the contrary, edema is present and diuresis is to be accomplished, the dextrose may be given in 25

or 50% solution. The greater concentration, however, should not be used if the circulation is sluggish, as there is some possibility of venous thrombosis.

The solution in the container should be warmed to a temperature of 115°F. It will then be about 100° when it enters the vein. A convenient means of obtaining the temperature of the solution near the vein is the Titus infusion thermometer. This is a glass rod which fits between the rubber tubing and the needle and provides a window through which the temperature of the passing solution may be read. This may be regulated by placing an electric heating pad about the container or tubing.

Caution

It is essential that the water used for the dilution of dextrose solutions be not only sterile, distilled, but that it be free from pyrogens or products of bacterial contamination.

EMETINE HYDROCHLORIDE*Indications*

Amebic dysentery and other inflammations of the intestines
Also used as a hemostatic in hemorrhages, slight or severe

For Intramuscular Administration*Supplied*

The solution contains 0.01% free hydrochloric acid and is made isotonic with sodium chloride

1 cc contains 0.03 Gm ($\frac{1}{2}$ gr)

1 cc size ampules, box of 12

1 cc size ampules, box of 25

1 cc size ampules, box of 100

Code Word

DIVINE

TASTE

EMINENT

1 cc contains 0.06 Gm (12/13 gr)

1 cc size ampules, box of 12

1 cc size ampules, box of 25

1 cc size ampules, box of 100

Code Word

DIVULGE

TASTEFUL

EATING

Dosage

In amebic dysentery 0.06 Gm is injected intramuscularly daily for seven days and not to exceed twelve. If symptoms are not overcome, treatment by mouth with iodo-hydroxyquinoline sulfonic acid (chimo-fon, yatren, or quinoxl) should begin before the last doses of emetine.

If necessary to repeat the administration of emetine, a month should elapse between courses and it should be discontinued upon signs of weakness. Brown of the Mayo Clinic stated that a total dose of 0.65 Gm or less a month per patient resulted in an incidence of 3 reactions to 554 cases. Diarrhea that may be caused by emetine is not to be mistaken for the diarrhea of dysentery.

For Intravenous Administration*In Peptic Ulcers*

In view of the effectiveness of emetine against ulcers caused by ameba, it is resorted to for the intravenous treatment of gastric and duodenal ulcers and has come to be depended upon in those conditions by some physicians. For general use intramuscular injections are safer.

There is evidence that Emetine Hydrochloride so given encourages disintegration of necrotic tissues and promotes healing by granulation

Supplied

1% Emetine Hydrochloride with 0.01% free hydrochloric acid, made isotonic with sodium chloride

6 cc size ampules, box of 6

6 cc size ampules, box of 25

6 cc size ampules, per 100

Code Word

ALMANAC

BLAZER

CANINE

Dosage

In gastric and duodenal ulcer, Olpp injects 6 cc intravenously very slowly every second day for six doses. After a rest of seven to ten days, a second course is given if required.

In both types of ulcers, the Sippy diet is prescribed during the first part of treatment and gradually modified. As a laxative, milk of magnesia only is to be used. If nausea occurs it is counteracted with an alkali by mouth.

Toxicity

Should there be a tendency to chills and fever following the injection, it is said they may be prevented by giving the patient by mouth a teaspoonful of sodium bicarbonate in a half-glass of water.

The effect of emetine is cumulative. If definite signs of toxicity occur, injections should be stopped at once. Indications of this are, rapid pulse, vomiting, diarrhea, and asthenia. Later effects are peripheral neuritis and cardiovascular disturbances.

EU-QUI-CAMPH

Indications

Subacute and chronic bronchitis, bronchiectasis, and bronchopneumonia, it may also be used as an adjunct in the management of lobar pneumonia.

Advantages

Assures the administration of the component drugs in a most effective way. Quinine is much more active given intramuscularly.

than when orally administered ¹ Eucalyptol, injected into the muscles, arrives at the area from the inside—via the arterioles—and is excreted through the mucous membranes. It thus may act upon the deeper aspects of the pathologic secretions lying directly on the membranes and affects equally the membranes of the trachea, the bronchi, the bronchioles, and the lungs.

Description

Each 2 cc contain

Eucalyptol	0.30 Gm
Quinine Alkaloid	0.06 Gm
Camphor	0.05 Gm
Menthol	0.06 Gm
Procaine Base	0.04 Gm
Olive Oil	q s

Physiological Action

The treatment of certain respiratory infections with Eu-qui-camph intramuscularly is based upon the toxicity of quinine for the *Bacillus pneumococcus*, the empirical benefit from camphor, the mucus-dissolving qualities of eucalyptol, and the relief of inflamed mucous membranes by menthol and eucalyptol.

Experimental work with quinine in the test tube showed marked destruction of pneumococci of types I and II. Yet some strains are more resistant to its effects than others and in the least resistant strains there are individual bacilli inhibited but not destroyed.

Solomon Solis-Cohen, an authority on quinine, used it as being peculiarly adapted to the treatment of pneumonia ¹. Experience in Europe shows the end results of the quinine treatment to be as good as those from serum, and much less dangerous to the patient because of the avoidance of anaphylactoid reactions from the serum.

The usual association of camphor and menthol with eucalyptol is retained in this preparation for the anesthetic and protective influence of menthol in inflammations. Closely related to oil of turpentine, camphor tends to strengthen heart action, so often weakened in respiratory diseases. Some believe that camphor is almost a specific in relieving passive pulmonary congestion.

Supplied

	<i>Code Word</i>
2 cc size ampules, box of 12	DREAM
2 cc size ampules, box of 25	TIGRESS
2 cc size ampules, box of 100	ESTEEM

Dosage

In bronchopneumonia, bronchitis, and bronchiectasis, 2 cc are given once or twice daily at the beginning of treatment. Later, the interval is gradually lengthened to three times weekly, then twice, then once. The treatment of chronic conditions is the same as the late treatment of acute. If given as part of the management of lobar pneumonia, treatment should be started with quinine dihydrochloride 0.25 Gm twice daily for two days. Then Eu-qui-camp may be administered.

FERRO-ARSEN*Indications*

That type of anemia secondary to defective nutrition and wasting diseases, in convalescence and where a tonic alterative effect is desired. More exactly it is called for when red cells are abnormally small because of a deficiency of hemoglobin and that, in turn, because of a deficiency of iron, hence the etiological descriptive terms, "microcytic," or "hypochromic" anemia.

Contraindications

Brain or lung congestion and in patients showing an idiosyncrasy for arsenic.

Advantages

Heath, Strauss and Castle¹ made a clinical comparison of parenteral and oral doses of iron in hypochromic anemia. They concluded that a daily dose of 1000 mg of metallic iron given by mouth (in the form of iron and ammonium citrate) is approximately equivalent in its blood building effects to a daily dose of 32 mg of metallic iron administered parenterally. Strikingly, almost the whole of the iron given by needle was assimilated, while but little of that taken through the stomach was absorbed, i.e., parenterally an average of 96% was effective as shown by the

amount of hemoglobin formed, while oral medication usually resulted in 3% utilization

It has been said by these authors and others that because of the toxicity of iron administered parenterally, inadequate dosage, and for practical and economic reasons, it is believed that it is undesirable to give iron by this means rather than orally in most cases. This view does not take into consideration the question of time, which often is the criterion by which the patient judges the results of treatment. When the record of Ferro-Arsen is reviewed and its essential freedom from untoward effects—on the contrary, its rapid effects and definite absorption—have been amply shown, it is evidently a notable exception in parenteral iron therapy. Its popularity has steadily grown until more than one and a half million ampules have been used—a substantial proportion containing 10 cc of solution. No serious untoward results following an injection have ever been reported. On the contrary, the solution is almost universally free of reactions.

Intravenous injections are less uncomfortable to the patient than intramuscular, Ferro-Arsen injections being virtually painless.

Description

Ferro-Arsen is a sterile solution of iron and arsenic. It should be noted that the 10 cc ampule contains as much iron and as much arsenic as does 4 grains of iron cacodylate. This may be compared with the 1 gr in the ampules of iron cacodylate known as Iron and Arsenic.

10 cc are prepared from

Sodium dimethylarsenate 0.32 Gm (5 grs.)

Ferric chloride 0.15 Gm (2¼ grs.)

With the chlorides of calcium, potassium, and sodium in redistilled water

5 cc are prepared from just one-half the above amounts

Physiological Action

Whipple and Robscheit-Robbins² found that iron administered intravenously to anemic dogs is converted to hemoglobin on the quantitative basis of 10 mg metallic iron to 3 grams hemoglobin. Iron given by mouth does not increase the hemoglobin proportionately. An optimum dosage by mouth of 40 mgs of metallic iron daily for two weeks produces about 55 grams of hemoglobin—35% utilization of the iron received.

Repeated doses of Ferro-Arsen in cases of iron deficiency, or hypochromic anemia, cause first a distinct increase in the percentage of hemoglobin and later an increase in the red cells. When iron is administered intravenously, the nucleated red cells, the predecessors of the erythrocytes, are multiplied notably, but their number does not explain all the improvement. The iron not immediately required in the blood is stored to the extent of 55 to 70 per cent in the liver and spleen,³ and the remainder in the bone marrow, mesenteric lymph glands, and kidneys where it remains as a reserve which is drawn upon from time to time to supply the needs of the organism.

Arsenic, a protoplasmic poison, given in therapeutic doses tends, as is well known, to destroy morbid or degenerated cells, including the blood corpuscles, and permits their replacement with new. This medicinal use of arsenic is possible because relatively small quantities induce vital alterations that do not involve the destruction of normal cells and because these effects are different from destructive changes in kind as well as in degree.

The view that the blood improvement is due to stimulation of the bone marrow receives some support from the researches of Stockman and others who found that arsenic increased the vascularity of the marrow and led to a replacement of fat by red corpuscles.

Therapeutic doses of arsenic have a favorable influence upon growth and nutrition. Whether this is the result of a direct stimulant action on the cells themselves or of dilatation of the blood and lymph capillaries is not known. The epithelial tissue of the skin appears to be especially susceptible to the regenerative effect of the drug and the central nervous system apparently shares in the improvement of general nutrition.

Because of its benign character, sodium cacodylate whose chemical structure is better pictured by the synonymous name of sodium dimethyl-arsenate, can be given in substantial dosage which will exert an influence over a longer period. The giving of Ferro-Arsen may consequently be pushed with a rapid regeneration of red cells, or injections may be given at greater intervals and yet not allow the system, part of the time, to be devoid of the drug's influence.

*Supplied**Code Word*

10 cc size ampules, box of 6	ACADEMY
10 cc size ampules, box of 25	BALLAST
10 cc size ampules, per 100	CHATHAM
5 cc size ampules, box of 6	ABYSS
5 cc size ampules, box of 25	BALEFUL
5 cc size ampules, per 100	CHATEL

Therapeutic Notes with Dosage

ALTERATIVE

As an alterative, Ferro-Arsen has been found of service in many anemic conditions that are consequences of impaired nutrition from infective diseases. Suggestive of the range of these primary diseases may be mentioned acute rheumatic arthritis, asthma of children and of old emphysematous persons, lethargic encephalitis and post-infectious psychoneurosis. The primary infection must be overcome before the anti-anemic treatment will be effective. Ten cc are usually given twice weekly—always intravenously.

ANEMIA, SECONDARY

Early signs of hypochromic anemia with low blood volume include fatigability, muscular weakness, vertigo, palpitation, dyspnea on exertion, tachicardia, low blood pressure, and pallor. Other symptoms less prevalent are enlargement of the spleen, recurrent inflammation of the tongue, and digestive disorders.

As an adjuvant to and following the various methods of removing the cause of this type of deficiency, Ferro-Arsen is of the greatest value. Without delay the patient notices an improvement in appetite, digestion, and general tone.

The initial dose should be 5 cc, then 10 cc, every two to three days and continued until the blood count and hemoglobin have been restored to approximately the normal. In cases with only a moderate amount of anemia, the 5 cc dose may be found sufficient if given twice weekly.

CHOREA

Authorities state that the three medicaments of use in chorea, in the order of their importance, are arsenic, iron, and fats. Ferro-Arsen supplies the first two. The third may be given in olive oil rubs.

The dose for a child of ten years is 5 cc the first and second

days, 10 cc the third, fourth and fifth days, the contents of both a 5 cc and 10 cc ampule the sixth and seventh days. Treatment is discontinued should edema appear.

CONVALESCENCE

Following a prolonged illness or an operation where the patient is slow to rally, 5 cc to 10 cc every 2 or 3 days.

RHEUMATIC CONDITIONS

Collins⁴ is not alone among clinicians who believe anemia due to a deficient hemoglobin content of the blood with a relatively insignificant fall in the red cell count is common among patients with chronic rheumatic conditions, and is most common among females. The severe degrees of this anemia are usually encountered only in cases of atrophic rheumatoid, or infective arthritis. This anemia is not specific in form, but is a simple hypochromic anemia secondary to the rheumatic condition.

TUBERCULOSIS

Ferro-Gui-Arsen is recommended for use in tuberculosis, when an intravenous tonic effect is desired. It is described later.

- 1 Heath, C W, Strauss, M B, and Castle, Wm B, J Clin Invest 11 1295, 1932
- 2 Whipple, G H and Robschert-Robbins, F S, Am J Med Sci 191 11, 1936
- 3 Hahn, P F, and Whipple, G H, Am J Med Sci 191 24, 1936
- 4 Collins, W H, Lancet 2 548, 1935

FERRO-GUI-ARSEN

Indications

Hypochromic anemia incident to bronchial infections

Advantages

The success that has come to physicians using Ferro-Arsen in anemias secondary to deficiency diseases created the request for a combination needed particularly where the respiratory apparatus is below normal. The qualities of Ferro-Arsen, together with added stimulating expectorant values, are available in the solution which is known as Ferro-Gui-Arsen.

Dr R B Homan of El Paso, Texas, a physician with many years' experience in the treatment of tuberculosis has written¹ "In most every tuberculous patient, there is a certain amount of secondary anemia. The extent of this should be determined, of course, by proper examination of the blood and when it is at all marked the patient should have iron and arsenic just as the patient with

secondary anemia from any other condition. In most cases it should be given intravenously, as is true of the calcium, because the results have been found to be much more satisfactory when it is given that way."

Description

10 cc are prepared from

Sodium dimethylarsenate	0.26 Gm (4 grs.)
Ferric chloride	0.07 Gm (1½ gr.)
Potassium guaiacol sulfonate	0.065 Gm (1 gr.)
Potassium creosote sulfonate	0.065 Gm (1 gr.)

with the chlorides of calcium, potassium and sodium in redistilled water

Physiological Action

In exhaustive diseases the reserve iron becomes inadequate to replace the constant new supply of hemoglobin required. The loss may be made good by the administration of convertible iron, but because absorbability is imperfect by the oral route comparatively large doses are required. The large dose in turn is prone to be astringent and irritant, producing indigestion and constipation and nullifying the benefit that should be received.

Supplied

- 10 cc size ampules, box of 6
- 10 cc size ampules, box of 25
- 10 cc size ampules, per 100

Code Word

ACCENT
BALSAM
CHEAPLY

Dosage

10 cc are given intravenously every two to three days

1 Homan R. B. Diseases of the Chest 3:6 (March) 1937

FORMODIDE "B"

Indications

Cystitis, and pyelitis, due to certain commonly causative organisms

Contraindications

Acute and chronic nephritis

Advantages

Helmholtz and Field of the Mayo Clinic carried out a series of experiments upon rabbits. They found in the dosages used,

methenamine was superior to mercurochrome and hexylresorcinol as a urinary antiseptic in cases of infection produced by *Staphylococcus albus* and *Bacillus coli*. It is more active in staphylococcus than in colon bacillus infections.

Methenamine with sodium iodide has been found extremely effective in the treatment of common infections of the urinary tract. The use of Formodide "B" secures the therapeutic value of the two constituents without the need for separate injections.

Description

20 cc contain

Methenamine	1 Gm (15½ grs)
Sodium Iodide	2 Gms (31 grs)
Sodium Chloride	0.1 Gm (1½ grs)

Physiological Action

Tends to reduce inflammatory conditions when administered in the presence of an acid urine. Aids absorption of abnormal fibrous tissue.

Supplied

Code Word

20 cc size ampules, box of 6	ACCLAIM
20 cc size ampules, box of 25	BAMBOO
20 cc size ampules, per 100	CHIDE

Therapeutic Notes with Dosage

If the urine is not normally acid, it should be rendered so during the administration of Formodide "B". This may be done by giving acid sodium phosphate or preferably ammonium chloride, either drug in 20 grain doses 4 times a day. The initial dose may be 10 cc, repeated in 12 to 24 hours followed by injections of 20 cc daily for three days.

Alternating Acidification and Alkalinization

Apparently improved results are obtained by preventing the causative bacteria from becoming tolerant to either acid or alkaline secretions. To accomplish this injections of Formodide "B" are suspended after the third dose 24 hours after the third dose.

an alkalinizer is given by mouth for two to three days. As the alkaline medication is discontinued, injections of Formodide "B" are immediately resumed. It is important for antiseptics that shifts from acid to alkaline or neutral hydrogen ion concentration of the urine be made rapidly. This alternating treatment is repeated until the urine is shown to be sterile. Citrace-Breon in doses of one to two tablespoonfuls t.i.d. is effective for the alkalinizing.

GUI-CALCIUM

Indications

An auxiliary in the treatment of tuberculosis and some other pulmonary diseases.

Contraindications

In hemoptysis, febrile tuberculosis with temperature above 100° F (Fishberg), heart inflammations, blood pressure dysfunctions and nephritis, also in the aged.

Advantages

In that part of the treatment of pulmonary tuberculosis embracing chemotherapy, the use of calcium will be placed first.

Calcium would never need to be prescribed, except perhaps in times of abnormal demand as in pregnancy if the calcium obtained in the food were utilized by the tissues. When a deficiency of calcium occurs, it is probably due to the fact that the mineral obtained in the food is eliminated more rapidly than it can be absorbed from the alimentary tract.

There is such a paucity of drugs that may be used with encouragement in tuberculosis that guaiacol is retained by some physicians despite lack of proof that it reaches the lung lesions in sufficient concentration to be effective. One of the forms in which this is administered is as the sulfonate which seems to be therapeutically as effective without causing irritation of the tissues.

Description

Gui-Calcium contains in each 20 cc calcium guaiacolsulfonate 0.65 Gm (10 grs). This includes calcium approximately 1 gram, the equivalent of 3.6 grains of calcium chloride.

Physiological Action

Guaiacolsulfonate is antipyretic, anesthetic, and a stimulating expectorant. It is less irritating to the tissues than guaiacol.

Calcium, known to be part of the cellular structure, is customarily credited with tending toward calcification of lesions, to increasing coagulability of the blood and to overcoming hemoptysis, unless the spitting of blood is due to hypertension.

The use of calcium salts in tuberculosis rests upon a definite deficiency of calcium in the blood plasma. That this is always true in tuberculosis is uncertain.

Supplied

20 cc size ampules, box of 6
20 cc size ampules, box of 25
20 cc size ampules, per 100

Code Word

AJAX
BEWILDER
CADENCE

Dosage

The first one or two injections of Gui-Calcium should consist of 10 cc. Subsequently 20 cc doses are given daily with a minimum of 30 injections to a course. The course should be repeated after a recess of two weeks. Injections are made in the morning before the temperature rises and must be made slowly.

HISTAMINE PHOSPHATE

Indications

In determination of achlorhydria in the differential diagnosis of the anemias, the treatment of some cases of rheumatism, prophylaxis against post-operative circulatory disturbances, and in desensitization of allergic individuals.

Contraindications

Histamine present in loose combination with the tissues is considered by certain observers to be the ultimate cause of all specific hypersensitiveness; they believe that reaction occurs when an antigen-antibody sets it free. It is then quickly destroyed in the body. It should, therefore, not be given (other than in minute, immunizing doses) to allergic persons. Also it is inadvisable to inject it in the presence of hypertension or heart dysfunction.

Advantages

Histamine, when injected subcutaneously or intramuscularly has been found to increase the gastric juice markedly, especially hydrochloric acid and inorganic salts. There is increase in saliva but practically no increase in the secretion of pepsin and mucus. The kind of information it brings and when, is shown by the approximately fifty persons who were injected with histamine hydrochloride by Gompertz and Vorhaus. Of these 11% showed a decided increase in gastric juice in 15 to 30 minutes, 66% in 30 to 60 minutes and 22% in 60 to 90 minutes. Of 17 individuals with total absence of free hydrochloric acid after an Ewald breakfast, 10 developed ample acid after the injection.

To find the secretory ability of the gastric glands has become an important diagnostic laboratory measure. The test "meal" of dry bread and water or of broth to stimulate the secretion of gastric juices followed by withdrawal of the stomach contents has been much used.

The Ewald meal is assumed to incite the patient's average conditions of digestion, but in so doing the fact is ignored that the stomach is called upon for much less activity than the size of a genuine meal demands.

The gastric juice sample obtained after the test meal is contaminated with food, which acts to some extent as a buffer and neutralizes free hydrochloric acid. Further, the food tends to cause the stomach to empty with loss of variable quantities of the secretions before the stomach tube is inserted.

In contrast, the injection of histamine stimulates probably the maximum output of hydrochloric acid for the stomach under test. The histamine test is especially applicable in suspected pernicious anemia because of the total absence of gastric enzymes and acid that distinguishes the disease.

Physiological Action

Histamine, or ergamine, is obtained from the decomposition of ergot and is found also in animal tissues, especially in pyloric mucosa. The effects for which it is used in medicine are produced principally through acceleration of the circulation, accomplished by its stimulation of smooth muscle, thus dilating the capillaries and arterioles. The most readily visible results of its action are heating and flushing of the skin.

The temporary changes in the blood induced by histamine injections, as summarized by Best and McHenry,¹ are a decrease in chlorides and in carbon-dioxide combining power of plasma and an increase in non-protein nitrogen and sugar. Due to an increase in the permeability of the vessel walls there is a concentration of the blood which results in a distinct augmentation of red cells and hemoglobin and reduced blood volume and leucocytes.

That there is experimentally no cumulative or lasting change in any of these elements was learned by Lang and Ettinger², when they caused shock in dogs for 90 minutes daily up to 266 days by intravenous injections of histamine. Further evidence is shown by the fact that a total of 2,322.1 mg of the drug were given intravenously by Jacobs & Mason to a normal dog for 62 days without harm.³

Histamine is a chemical derivative of histidine. It may be prepared from the latter by removing carbon dioxide from the molecule. Although similar in chemical composition, the physiological actions of these two compounds are markedly different, in fact, they are almost opposite in nature. Histidine tends to inhibit the secretion of hydrochloric acid in the stomach, while histamine stimulates hydrochloric acid secretion.

Supplied

In 10 cc rubber capped vials. Each cc of the vial contents contains 1 mg (1/65 gr) with chlorbutanol (chloroform derivative) 0.5%.

10 cc size vials, each
10 cc size vials, box of 6

Code Word
DROOP
DRUMMER

TO DETERMINE THE ABILITY OF THE STOMACH TO SECRETE ACID

Histamine phosphate, when injected subcutaneously or intramuscularly, has been found to increase the gastric juice markedly, especially hydrochloric acid and inorganic salts. There is increase in saliva, but practically no increase in the secretion of pepsin and mucus.

The drug is now used intramuscularly to differentiate a functional lack of stomach acidity from true achylia as in pernicious anemia. It is given also to test the power of the gastric function in other types of digestive disturbances.

A few individuals show a substantial increase in gastric juice in 15 to 30 minutes after an injection of Histamine, the greatest number produce the increase in 30 to 60 minutes, and about 20% require 60 to 90 minutes

Dose in stomach acid secretion function test

0.5 to 1 mg of Histamine Phosphate is injected subcutaneously or intramuscularly. The patient should be questioned as to any allergic tendency and if present the initial injection be reduced to test proportions

IN CHRONIC RHEUMATISM

Eastwood said⁴ histamine phosphate benefited almost every type of rheumatism by relief of pain and vasomotor symptoms and through increasing the range of joint movements

Shanson also has reported⁵ on the "loosening" action of histamine on joints restricted in movement by chronic rheumatism. It is probably of most value in those cases in which the soft tissues are primarily affected and which manifest vasomotor symptoms rather than in cases symptomatized by pain. Impaired movement in shoulder and knee joints and in the hand, when shutting and gripping are interfered with, have sometimes responded favorably.

Dose in chronic rheumatism

0.1 mg (0.1 cc) may be administered intramuscularly as the initial dose and this be increased by 0.1 mg daily until improvement or a definite reaction appears. Improvement, if it occurs, may be seen between injections of 0.1 and 0.5 mg. Such dose is repeated until no further effect occurs, when the dose is increased by 0.1 mg. After the first benefit is noted intervals between injections may be lengthened to 2 to 3 weekly

AS A DESENSITIZER IN ALLERGY

Histamine has been used by Dzsinich⁶ in allergic individuals to raise the immunity on the theory that in such patients sensitization is due to the setting free of histamine from body cells. Dzsinich believes that with individualized dosage, permanently satisfactory results may be secured in a proportion of asthma and urticaria cases, although he had some failures

Thiberge⁷ found histamine useful in treating allergies of skin, digestive, and bacterial types. In a parallel series of asthma patients,

compared with typhoid vaccine histamine was twice as effective in spring and perennial cases, but much less effective than vaccine in autumn cases. He concluded that histamine is more rapid and powerful but less safe than the other.

Dosage as a desensitizer

Minute doses are required in desensitization to avoid untoward effects. In moderately severe cases 0.0001 mg is given as the initial dose, severe cases require as little as 0.00001 mg. Suggestions to make the obtaining of such small doses practicable are included in each package of the solution. Relief from allergic symptoms may be obtained by the tenth injection. Other cases require up to thirty.

TEMPORARY PROPHYLAXIS AGAINST CIRCULATORY DISTURBANCE

To discover and protect prospective surgical cases who are subject to circulatory imbalances, the following method is used by Rusznyak, Karady and Szabo.⁸ Eight to ten days before operation the patient is given an injection of Histamine Phosphate 0.005 mg. This test injection is made intravenously. If the systolic pressure, after the customary brief fall, rises markedly, the patient is considered to be subject to post-operative circulatory disturbance. Thereupon histamine administration continues until operation. This prophylactic series begins with a dose of 0.5 mg which is later increased to 1.0 mg and the injections are made subcutaneously twice daily.

By the method a defective blood pressure response is said to be changed to a normal for three or four days beyond the final injection.

- 1 Best, C. H. and McHenry, E. W., *Phys. Rev.* 11 371, 1931
- 2 Lang, J. and Ettinger, G. H., *Can. M. Assn. J.* 35 186, 1936
- 3 Jacobs, H. R. and Mason, E. W., *Am. J. Phys.* 116 376, 1936
- 4 Eastwood, C. G., *J. State Med.* 43 720, 1935
- 5 Shanson, B., *Brit. J. Phys. Med.* 10 185, 1936
- 6 Dzsinnich, A., *Klin. Woch.* 14 1612, 1935
- 7 Thiberge, N. F., *J. Allergy*, 6 282, 1935
- 8 Rusznyak, S., Karaday, S., and Szabo, D., *Deut. med. Woch.*, p. 1111, 1935

HYDROCHLORIC ACID

Indications

Is being much used empirically in some areas in almost every kind of infection Hydrochloric acid, unlike most other agents given with the direct purpose of stimulating the production of antibodies and phagocytes is given intravenously

Supplied

In three concentrations, 1 1500, 1 1000 and 1 500, all in 10 cc ampules and at the same price

The stated strengths are based on absolute Hydrochloric Acid not upon Hydrochloric Acid, USP, which contains but 31 to 33% HCl The concentration known as 1 1000 solution contains Hydrochloric Acid, USP 2 8 1000 The 1 500 concentration contains Hydrochloric Acid USP 5 6 1000 and the 1 1500 concentration contains Hydrochloric Acid USP 1 4 1000

10 cc size ampules, box of 6

10 cc size ampules, box of 25

10 cc size ampules, per 100

Dosage

In the average case an intravenous injection is given every two to three days In severe cases injections have been given daily for several days and the interval then extended If the services of a pathological laboratory are available, blood counts may be made and the dose repeated when the leucocytes return to nearly the number present before the injection

IRON AND ARSENIC (IRON CACODYLATE)

Indications

Popularly used in secondary anemia of the hypochromic type as a tonic and alterative

Description

Contains 12% elemental iron and 44% arsenic in the form of cacodylic acid

*Supplied***For Intramuscular Injection**

This concentration is best suited to intramuscular use but with the appropriate technic may be given intravenously

2 cc contain 0.065 Gm (1 gr) Iron Cacodylate

2 cc size ampules, box of 12

2 cc size ampules, box of 25

2 cc size ampules, box of 100

Code Word

DAUNTED

TASSEI

EFFIGY

For Intravenous Injection

5 cc contain 0.065 Gm (1 gr) Iron Cacodylate

5 cc size ampules, box of 6

5 cc size ampules, box of 25

5 cc size ampules, per 100

Code Word

ACTUAL

BAWBLE

CHUBBY

Dosage

Iron cacodylate tends to be irritating, difficulty is often experienced in giving it in sufficient amount for what is now considered adequate dosage. It is expedient to give a fractional dose at the first injection to test the degree of discomfort experienced by the individual patient. Some persons will not readily tolerate more than $\frac{1}{2}$ grain but in most the dose may be increased to 1 grain. For convenience it is usually given every second day.

IRON ARSENITE*Indications*

An adjunct in the overcoming of certain cases of secondary anemia.

Supplied

1 cc contains 0.065 Gm (1 gr) which represents 15% metallic iron and about 14% arsenous acid, with quinine and urea hydrochloride 0.5% as a local anesthetic.

Code Word

1 cc size ampules, box of 12

DAUB

1 cc size ampules, box of 25

TEMPLAR

1 cc size ampules, box of 100

EFFACE

Dosage

One grain every one or two days, given intramuscularly.

IRON-ARSENIC-STRYCHNINE-NUCLEINATE

Indications

A tonic and condition builder

Description

1 cc contains

Iron and Ammonium Citrate	0 049 Gm ($\frac{3}{4}$ gr)
Potassium Arsenite	0 001 Gm (1/64 gr)
Strychnine Sulfate	0 001 Gm (1/64 gr)
Sodium Nucleinate	0 008 Gm (1/8 gr)
Quinine and Urea Hydrochloride	05%

The addition of nucleinate to iron citrate tends to increase the bodily resistance to bacterial infection and also makes the solution more stable

Supplied

Code Word

1 cc size ampules, box of 12	DAUPHIN
1 cc size ampules, box of 25	TARTLY
1 cc size ampules, box of 100	EGOTIST

Dosage

One cc every one or two days, injected intramuscularly

LACTPRO

Indications

Infections amenable to non-specific protein therapy Broadly it is accepted as sound treatment in eye, pelvic, and skin infections, acute and chronic, and in some generalized inflammations such as infectious arthritis

Contraindications

Alcoholism, uncompensated heart dysfunctions, marked arteriosclerosis, extreme exhaustion following illness In those hypersensitive to protein it is given at first only in small doses graduated upwards

Advantages

An injection of Lactpro is a call to the resistant powers of the body to mobilize at the weakest point—the site of the infection

Non-specific proteins may be divided into First, prepared proteins which cause a systemic activation with a rise of temper-

ature, Second, those which lift the temperature and stimulate other protective forces of the body Lactpro is a compromise between these two It has been cleared of all fat and toxins and therefore does not produce the high temperature that usually follows the injection of whole milk It otherwise has all the characteristics of milk unchanged Some reaction may be expected to accompany the activation of protective bodies which it incites

Supplied

Code Word

10 cc size ampules, box of 6	DARLING
10 cc size ampules, box of 25	BEDAUB
10 cc size ampules, per 100	EDITION
5 cc size ampules, box of 6	DARKEN
5 cc size ampules, box of 25	BARON
5 cc size ampules, per 100	EDIFY
2 cc size ampules, box of 12	DRAUGHT
2 cc size ampules, box of 25	BRACKET
2 cc size ampules, box of 100	EDIBLE

Dose

For adults, the initial dose is 5 cc, subsequent injections, 10 cc given in the gluteal muscles, for children 1 to 5 years, 2 to 5 cc Injections may be made every 3 to 5 days

LIVER SOLUTION, PURIFIED

Indications

Pernicious anemia, i.e., physiological deficiency anemia of the macrocytic, hyperchromic type Especially required when it is impracticable to feed liver, due to faulty assimilation or because the taste has become obnoxious, and for those in extremis when quick production of red cells is imperative Patients showing definite neurological signs usually require parenteral injections to obtain the effects of the large amount of liver material necessary

Minot adds to the list of indications other macrocytic anemias that accompany sprue, abdominal disease, pregnancy, etc Skin lesions of pellagra likewise improve under liver therapy¹ Many cases of hypochromic or secondary anemia also receive Liver Ex-

tract of this fraction, although the evidence of its value is not clear cut

Contraindications

None— except that a rare individual is hypersensitive to injected liver extract

Advantages

Some individuals unquestionably fear the needle puncture. Offsetting this, the administration of Liver Solution intramuscularly automatically overcomes the objections to oral therapy mentioned. It is the only route that is practicable in cases of nervous system involvement which may require amounts much greater than needed to overcome the blood deficiency.

The Council on Pharmacy and Chemistry of the A.M.A. has expressed the opinion that extracts for parenteral administration may be prepared from 10 to 15 grams of material which will induce and maintain a remission of pernicious anemia equal to the daily eating of from 200 to 400 grams of fresh liver. Others have made the comparison on the basis of the parenteral route giving effects equal to fifty times the potency of liver by mouth.

The advantages of parenteral administration may be summed up as (1) certain absorption resulting in rapid hematopoietic response, (2) uniformity of dosage and certain control of administration, (3) greater time intervals rather than daily treatment, (4) much greater assurance against progress of neurological degeneration. "Failure of Liver therapy in pernicious anemia means inadequate treatment, incorrect diagnosis, or existence of complications."

Description

At the time this is written (June, 1937) the manner of evaluating liver extract is in a state of transition. The Antianemia Preparations Advisory Board is formulating standard methods of testing and of designating potencies. When these regulations are announced our Liver Solution, Purified, will conform. Even before that we expect to offer a new solution with interesting qualities which are now under clinical test. In the meantime, the descriptive facts below apply

Liver Solution-Breon is a further purification of the fraction G of Cohn for use in macrocytic, hyperchromic or pernicious anemia. It has been freed of fatty substances and extraneous proteins to the extent that intramuscular injections may be made without harm and with a minimum of discomfort to the patient.

Supplied

50 Gms in 2 cc

Each cc contains the fraction G of Cohn principle extracted from 25 Gms fresh liver with phenol 0.5%

2 cc ampules, box of 12
2 cc ampules, box of 25
2 cc ampules, box of 100

Code Word

DOLEFUL
TENNIS
ENGULF

250 Gms in 10 cc

Each cc contains the fraction G of Cohn principle extracted from 25 grams fresh liver, with phenol 0.5%. In rubber capped vials

10 cc vial, each
10 cc vial, box of 6
10 cc vial, box of 25

Code Word

DISLODGE
DIPLOMA
THAWED

333 Gms in 10 cc

Each cc contains the fraction G of Cohn principle extracted from $33\frac{1}{3}$ grams fresh liver with phenol 0.5%. In rubber capped vials

10 cc vials, each
10 cc vials, box of 6
10 cc vials, box of 25

Code Word

DISTILL
DISTINCI
THEATER

500 Gms in 10 cc

Each cc contains the fraction G of Cohn principle extracted from 50 grams fresh liver, with phenol 0.5%. In rubber capped vials

10 cc vials, each
10 cc vials, box of 6
10 cc vials, box of 25

Code Word

DISTRESS
DISTURB
THEME

Therapeutic Notes and Dosage

PERNICIOUS ANEMIA

The question arises do the most concentrated extracts retain the same ratio of active principle to raw liver that is present in the less concentrated extracts? Murphy² believes that this is true— an extract of 100 grams of liver in 1 cc does retain the antianemic potency to an extent entirely comparable to that of the most efficient of less highly concentrated extracts. But in the experience of Bethell,³ as well as some others, such concentrated extracts have uniformly failed to bring the expected increase indicating that compared to the more dilute solutions from 50% to 75% of the potency has been lost during the process of concentration. An extract from 50 grams of liver in 1 cc administered parenterally will, in uncomplicated cases, according to Bethell, incite a maximum reticulocyte response. It has been observed also by Minot¹ that the fact that a preparation is three times as concentrated as another does not assure that the amount of potent material therein is three times as great. It may actually be less potent.

Dose in pernicious anemia

Cases of macrocytic, or pernicious, anemia in acute phase well receive intramuscular injections of material derived from 100 grams of liver daily for 14 days. A similar injection may then be given weekly for two months, after which the injection interval may be lengthened to every two to four weeks. The maintenance dose is likely to be the extract from 100 grams at least once monthly and, in addition, liver by mouth when practicable.

It should be emphasized, however, that each patient must be considered individually and that the real criterion of dosage is to bring the red blood cell count to five million or more as quickly as possible and to maintain it at that level. Liver administration that was formerly described as adequate will not always prevent neural symptoms, but such involvement of the central nervous system can be mitigated and further advance prevented if liver material sufficient for the purpose is given. If, after the red blood cell count is normal, neural symptoms continue in evidence, an increase of 50% in the liver administration may be tried.

Intensive treatment should be continued while the diameter or volume of the red blood cell is greater than normal, while the white blood cells and platelets and the color index are above normal.

AGRANULOCYTOSIS

Present evidence points to agranulocytosis as primarily due to dysfunction of the bone marrow, especially of its ability to produce white cells. Stimulation of the leucopoietic activity as well as the other functions of the bone marrow may be accomplished by liver extract of the fraction used in the treatment of pernicious anemia. Murphy has said that, used in adequate amounts in this disease liver brings the most satisfactory results yet reported.

Dose in agranulocytosis

As early as possible, solution representing 100 Gms of fresh liver is given every 3 hours day and night for 3 days. Injections are then made every 4 hours for one or two additional days, then twice daily until a total of about ten days has elapsed. Liver by mouth may supplement the injections as soon as practicable.

HYPOCHROMIC OR SECONDARY ANEMIA

Although the pernicious anemia fraction of liver does not have a specific action in secondary anemias, it is actually extensively used in these conditions. Anemias incident to such conditions as pregnancy and poor dietary may respond because there is a liver deficiency that cannot be easily corrected by food, even liver ingested. Murphy⁴ has been impressed with results from treatment by intramuscular injections of liver such as used in pernicious anemia together with iron by mouth. Clinical improvement is more evident and rapid than where iron alone is used. Iron alone cannot produce hemoglobin or other constituents of the red blood cell, other blood-building material may be deficient, possibly that obtained from the liver fraction of Whipple which is effective in anemia due to hemorrhage.

Dosage

The administration is dependent upon individual conditions but usually requires less intensive treatment, such as injection of extractives of 25 to 50 Gms twice weekly.

SPRUE

The similarity of the symptoms of sprue to those of pernicious anemia has been pointed out. Administration of liver extract of the same fraction is used in both diseases.

Dose in sprue

If anything, the administration in sprue must be more intensive. For that reason, the intravenous route appears to be favored. Ex-

tractives of 100 Gms of liver are injected daily until the initially severe symptoms are overcome, the amount is then reduced. Yet persistence is necessary in the treatment and the value of iron as an accessory has been shown.

- 1 Minot, George R., Lancet 1 361, 1935
- 2 Murphy, Wm P., Am J M Sci 191 597, 1936
- 3 Bethell, Frank H., N Y State J Med 35 799, 1935
- 4 Murphy, Wm P., N Y State J Med 35 793, 1935

MAGNESIUM SULFATE 10%

Indications.

Valuable as an adjunct to treatment commonly used in eclampsia, edema of the lungs, hypertension, status epilepticus, tetanus, toxemia of pregnancy, toxemia of spider bites, uremia of acute nephritis. In each of these the drug is used for one or more of its actions as mentioned below.

Contraindications

Cardiac insufficiency and impaired kidney function

Description

A sterile solution of magnesium sulfate of reagent grade carefully prepared by accurate laboratory procedure in a 10% solution in two sizes of ampules.

Physiological Action

Anticonvulsive, anesthetic, tissue dehydrant, sedative

Supplied

Code Word

20 cc size ampules, box of 6	ACUTE
20 cc size ampules, box of 25	BAYONET
20 cc size ampules, per 100	CIGAR
10 cc size ampules, box of 6	AMBLE
10 cc size ampules, box of 25	BLUNTLY
10 cc size ampules, per 100	CAPER

Therapeutic Notes with Dosage

Magnesium sulfate may be administered intravenously, intramuscularly, and intraspinally. In the muscles, discomfort results and failure of absorption with a slough may follow. There appears to be no good reason for placing the drug in the spinal canal since a safer, satisfactory, and more convenient route exists in the blood stream.

AS A PALLIATIVE IN HYPERTENSION

Magnesium sulfate intravenously had previously been known to benefit high blood pressure, when Lissner of the department of cardiovascular diseases of Cedars of Lebanon Hospital, Los Angeles reported² his experience embracing several thousand injections

One to several doses brings a drop of 10 to 40 mm of mercury 10 to 30 minutes after injection

In addition to the pressure lowering ability of the solution it affects secondary symptoms desirably This is particularly true of eye circulatory dysfunctions Clinically, there is also seen relief of nervous manifestations There were no evidences of variation from the normal rhythm of the heart nor other depressive cardiac occurrences except in two cases which later continued the treatment

The reduction of blood pressure caused by therapeutic doses of magnesium sulfate intravenously is probably due to its depressive action on motor nerve endings Toxic doses depress all parts of the central and peripheral nerve system

Dose in hypertension.

The dose may uniformly be 10 cc of a 10% solution The intervals are gauged by the clinical response Many cases will receive a daily intravenous injection for 30 days, then the intervals are gradually lengthened to every second day, third day and once weekly.

The higher the pressure the greater the number of injections required to bring it down When it is stationary or normal the patient is instructed to return in a month for further treatment or sooner, if symptoms return

INJURIES OF THE HEAD

Magnesium sulfate has been found safer, though slower, in preventing edema in head injuries than hypertonic solutions of sodium chloride

10 cc of a 10% solution have been given in a series of cases at 4 hour intervals for six or eight doses.

Magnesium sulfate is known as a respiratory depressant While no reports of untoward effects have been received following modern usage the need for slow entrance into the blood stream (2 cc per minute) is pointed to by the fact that dosage is basically a matter of rate

If any difficulty is noted, 5 cc of 5% calcium chloride intravenously should correct it almost immediately

CRISES OF BRONCHIAL ASTHMA

Ten to 20 cc of magnesium sulfate 10% were given intravenously by Rosello and Pla in asthmatic paroxysms which had not been relieved by epinephrine, narcotics, or other drugs. The magnesium sulfate caused an immediate and intense antispasmodic effect. The action is transient and injections must be repeated.

ECLAMPSIA

Edema of the brain with resulting increase in its mass has been shown to be a nearly constant accompaniment of eclampsia and there is reason to believe that the increased brain pressure may cause convulsions. Intravenous injections of magnesium sulfate in adequate amount will reduce both the brain bulk and cerebrospinal fluid pressure.

The treatment in addition to its anticonvulsive effects aids in clearing up the toxemia by dehydrating the tissue fluids. It increases the fluid content of the blood which promotes diuresis, to relieve kidney congestion and aid elimination.

Dose in eclampsia

In preeclampsia 20 cc of 10% magnesium sulfate are injected intravenously and repeated when need is shown by rise of the systolic blood pressure and other signs of toxemia.

In the presence of convulsions 20 cc are injected as early as possible and repeated every hour until the convulsions subside. The later treatment is gauged by any recurrence of symptoms. As many as 120 cc have been administered safely in 24 hours.¹

SPIRIDER BITE POISONING

From different parts of the world have come comments on the effectiveness of this drug in reducing hypertension and spasms of muscles resulting from spider bites—the “black widow” and the “red back.” The poison of the widow and probably other arachnids is a toxalbumen.

A vital part of the counteraction is to overcome the increased blood pressure and spasticity of muscles. Magnesium sulfate has been used effectively for the purpose. 20 cc of a 10% solution are injected intravenously and repeated as the symptoms require. Other measures are to put the victim at complete rest. A barbiturate is given by mouth, water freely, and an enema.

STATUS EPILEPTICUS

25 cc of a 10% solution apparently stops an attack and prevents fatalities This dose may be repeated if necessary

TETANUS

Magnesium sulfate intravenously tends to relieve the pain and to stop the spasms so that the swallowing of food becomes possible

Intravenously, 20 cc of a 10% solution are injected and repeated when there is a feeling of tightness about the chest or inability to swallow

1 McNeile, G, J A M A, 103 548, 1934

2 Lissner, H H, Calif & West Med 40 330, 1934

MAGNESUL

Indicated

In the original Gwathmey technic for the alleviation of pain in labor Generally used in conjunction with etherized oil, the latter instilled rectally

Formula

Magnesium sulfate	50%
Procaine hydrochloride	2½%
Redistilled water	qs ad 2 cc

Physiological Action

Complete anesthesia can be obtained from magnesium sulfate alone. When injected in a muscle it tends toward complete muscular relaxation Procaine further increases the efficiency and allays irritation without adding to the toxicity A concentrated magnesium sulfate is not readily absorbed if the circulation is sluggish This has caused Magnesul to be used much less than formerly

Supplied

2 cc size ampules, box of	12
2 cc size ampules, box of	25
2 cc size ampules, box of	100

Code Word

DAZZLE
TESTATE
ENMITY

Dosage

Injected intramuscularly The technic for the administration of Magnesul as an analgesic in labor cases is included in each package

MANGANESE BUTYRATE

Indications

A stimulant to cellular resistance against pus-producing infections, including gonorrhea, acne, boils, carbuncles, and other staphylococci infections. Inflammation due to the streptococci does not respond.

Advantages

The benefits from the use of manganese butyrate solution in general appear to be due to the stimulating of cellular action empowering leukocytes and endothelial cells to enclose and absorb the invading bacteria.

Description

The solution contains manganese butyrate 1%, a colloidal, organo-metallic compound, with saligenin (salicyl alcohol) 4%.

Supplied

There are three sizes of ampules. 1 cc and 1½ cc are packed together so that a box of 12 ampules consists of six 1 cc (white label) and six 1½ cc (black label). The 2 cc size ampules are packed all of one kind in the box and are supplied in boxes of 12, 25, and 100.

Code Word

1 cc and 1½ cc combination, box of 12	DEMOLISH
1 cc and 1½ cc combination, box of 25	THEOLOGY
1 cc and 1½ cc combination, box of 100	ELASTIC
2 cc size ampules, box of 12	DETHRONE
2 cc size ampules, box of 25	FAXABLE
2 cc size ampules, box of 100	ENEMY

Dosage

The first dose is usually 1 cc. Four or five days later an injection of 1½ to 2 cc is given. Reports have been received of the use of as many as eight injections with continued good results.

In gonorrhea the drug is administered in conjunction with the physician's usual routine treatment.

Therapeutic Notes

Fifty cases of boils were treated by Pearce and Valke¹ of which 75% responded favorably to two injections. Some of these were cases that had previously been given autogenous vaccine with

no results Where treatment was ineffective, it was found that a mixed infection was present or the constitution was too low to respond The authors concluded that this treatment is superior to other therapy advocated in furunculosis and made unnecessary surgery or topical applications Several hundred cases of inflammations of the skin and subcutaneous tissue, including abscesses and acne, were treated by the same authors with uniform success except in streptococci infections ²

Manganese in various forms has been injected in psoriasis, both intramuscularly and intravenously, with reputed good results Spitz³ concluded in 1936 that "colloidal manganese appears to be the most favorable addition to our armamentarium of therapeutic measures in psoriasis" This author injected 0.5 cc in the gluteal muscles and increased the dose gradually to 2 cc at intervals of 5 days with a total of 20 injections Best results were obtained when manganese injections were combined with ultraviolet light and application of ointments

1 Pearce, C T and Valke, L E, J Med 10 123, 1929

2 Pearce, C T and Valke, L E, J Med 12 484, 1931

3 Spitz, J, Urol & Cut Rev 40 633, 1936

MERCUROCHROME

H W & D

Indications

GENERAL SEPSIS

Mercurochrome has been administered intravenously in the treatment of many types of sepsis In a collection of 173 cases reported in the literature, it was concluded that the treatment was of distinct advantage in the majority Others fail to respond, without explanation Ampules should not be retained over a longer period than necessary

Supplied

In 1% solution

10 cc size ampules, box of 6

10 cc size ampules, box of 25

10 cc size ampules, per 100

Code Word

ADDITION

BEADLE

CLAIM

Dose and Interval

Young and his associates, after experience with greater doses, recommended in adult cases of ordinary urinary infections 12 cc

of the 1% solution to be given intravenously, followed in two days by 15 cc, three days later by 18 cc and again in four days by 20 cc. Grave septicemias should be given about 20 cc as the initial injection, subsequent dosage to be guided by the reaction. Sharply heightened temperature may be expected. According to these authorities the dosage should never exceed five milligrams per kilogram in children weighing 42 lbs or less, nor more than three milligrams per kilogram for any patient in excess of this weight.

If the patient is dehydrated, dextrose and physiological salt solution should be infused before injecting mercurochrome, this to aid the kidneys in eliminating the latter.

There is direct disagreement by Martin¹ with the above conservative dosage. He believes that success with mercurochrome depends upon concentrating it in the body tissues to an extent that will permit it in a short time to kill the bacteria present. Six mg per kilo may, in Martin's view, be a low dose in many cases, provided the kidneys are functioning reasonably well. Bacteriostasis is not enough, for the drug is quickly eliminated. It is seen in the urine in 30 minutes and is at its height of elimination in about three hours. Martin prefers any risk there may be in a high dose to missing the successful dose in an otherwise fatal infection. He states he has in numerous cases (not obese) given 62 to 65 mg of the drug per kilo of weight, without bad results.

1 Martin, A. P., Ill. Med. J. 68:435, 1935.

MERCURY OXYCYANIDE

Indications

Late syphilis when mercury to be injected intravenously is desired. It may be used as an interval treatment between courses of one of the arsenphenamines.

Contraindications

Mercury in any form has a tendency to harden the vein walls. It is therefore not desirable when the veins are small or few are accessible, and in any case should be injected slowly— not faster than 1 cc per minute.

*Supplied*001 Gm ($1/6$ gr) 5 cc ampules*Code Word*

Box of 6 ampules

ADHERE

Box of 25 ampules

BEATEN

Per 100 ampules

CLARET

0016 Gm ($1/4$ gr) 5 cc ampules*Code Word*

Box of 6 ampules

ADHESION

Box of 25 ampules

BEAUTIFY

Per 100 ampules

CLAUSE

Dosage

Some physicians prefer to give this form of mercurial treatment daily over a period of three or four weeks. Others find it as therapeutically effective when administered every second or third day. The ampule containing $1/4$ grain is the more popular. Mercury Oxycyanide may be used as an interval treatment between the arsphenamines or bismuth, also as an alternative drug with the arsphenamines.

MERCURY SUCCINIMIDE

*Indications**Syphilis*

A water soluble salt of mercury, therefore is easily drawn into syringe and is more rapidly absorbed by the tissues than is mercury salicylate. Consequently, it is injected in smaller doses and should be given frequently—four to six times weekly.

Contains the equivalent of approximately 50% elemental mercury.

*Supplied*1 cc contains 001 Gm ($1/6$ gr)*Code Word*

1 cc size ampules, box of 12

DESTINY

1 cc size ampules, box of 25

TAXLESS

1 cc size ampules, box of 100

ENDOW

Dosage

One cc every one or two days. May be increased to $1\frac{1}{2}$ cc ($1/4$ gr) in certain cases.

COLLOIDAL MERCURY SULFIDE 3%

Indications

Syphilis The slower response of primary lesions to mercury hinders its use as first treatment. But in early secondary syphilis prolonged treatment with Colloidal Mercury Sulfide followed by a course of arsphenamine has proved to be especially effective. In general, its scope is that of a co-aid after the early course of arsphenamine and especially between courses of arsphenamine and bismuth, in secondary and later phases. In this use it completes the effect from the previous agents. Although bismuth has done much to displace mercury in the treatment of syphilis, some clinicians feel that an adequate mercury preparation is desirable for its immunity raising ability.

Advantages.

Of the mercury formerly to be had the insoluble forms are difficult to inject and are painful to the patient. The soluble forms, because of their quick absorption, have been limited to small dosage and this makes frequent injection necessary. Colloidal Mercury Sulfide to a large extent overcomes the disadvantages of both previous types of mercury. Because of its colloidal nature it can be given in fairly heavy dosage, yet, there is no difficulty surrounding its absorption.

The assimilability of the preparation is also in part due to the binding of the mercury with sulfur. By this means the active drug is restrained in an insoluble form and is released for its mercurial effect at a slower and more uniform rate. Mercury-sulphur combinations historically have been easily precipitated. Colloidal Mercury Sulfide-Breon is stabilized with non-protein material.

It is effective in the early treatment of congenital cases and syphilitic aortitis when too intense an effect may be undesirable. Gummata and syphilitic neoplasms are especially susceptible to being effaced by it in a few weeks. It has proved its general effectiveness in reversing the Wassermann reaction but the comparative rapidity with which it does so has not been settled.



COLLOIDAL MERCURY SULFIDE-BREON is prepared by an exclusive process which includes as one of its steps the crystallization of the mercury sulfide complex in distinctive, tresslike black scales

Supplied

In rubber stoppered vials to permit the giving of gradually increased doses Each vial contains 30 cc of Colloidal Mercury Sulfide 3%, with creosol 0.2%

Single vial, each

Box of six vials

Code Word

AMULET

AMUSE

Dosage

2 cc of the 3% solution are injected deep intramuscularly twice weekly for about twelve weeks, as a single course The intravenous route is occasionally used without systemic reactions but is not recommended

The maximum uniformly tolerated single dose of Colloidal Mercury Sulfide-Breon has been found in the white rat to be 80 mg per kilogram If this may be compared on a weight basis with the human being, it would equal in the average person a maximum tolerated quantity of about 48 grams, certainly an ample margin above the 0.06 grams contained in a single 2 cc dose

Therapeutic Notes

A non-technical description of a colloid is a particle of matter so minute it will pass through a filter of the finest degree It can go where a bacterium is too big to go Too small to be seen by the usual microscope, colloids may be detected under a powerful ultra-microscope Under this, the particles appear as specks or light darting about and never touching one another The therapeutic significance of colloids is due partly to the fine dispersion of the individual particles which enormously increases their total surface The augmented area of the chemical which can come in contact with the tissues or body fluids increases the remedial action and yet does not amplify the toxicity

METHENAMINE

(Formerly Hexamethylenamine)

Indications

Cystitis and certain other infections of the urinary tract, due to the bacillary group of organisms

Contraindications

Acute and chronic nephritis

Advantages

Methenamine's activity depends upon the liberation of formaldehyde as a result of decomposition by hydrolysis in acid solution. It may be taken by mouth but the same hydrolysis occurs in the acid stomach secretions, affecting 15% to 60% of the drug. To this extent the premature formation of formaldehyde is ineffective and in addition tends to irritate the alimentary tract.

Supplied

It is prepared in three strengths, each in 5 cc ampules

	<i>Code Word</i>
0.45 Gm (7 grs), box of 6	ACCOUNT
0.45 Gm (7 grs), box 25	BANNER
0.45 Gm (7 grs), per 100	CARBON
0.97 Gm (15 grs), box of 6	ACCUSE
0.97 Gm (15 grs), box of 25	BANQUET
0.97 Gm (15 grs), per 100	CAREFUL
2.00 Gm (31 grs), box of 6	ACCUSTOM
2.00 Gm (31 grs), box of 25	BANTAM
2.00 Gm (31 grs), per 100	CARESS

Therapeutic Notes with Doses and Interval

If the urine is not normally acid it should be rendered so during the administration of Methenamine by giving ammonium chloride orally.

The introductory dose may be 0.45 Gm. This is to be repeated in 12 to 24 hours and followed by doses of 0.97 Gm. to 2 Gm., depending upon the results obtained. The interval for the larger doses is about two days, and a course of treatment should not extend over a 2 weeks' period.

As inflammation in the bladder is usually secondary to inflammation in some other organ, i.e., kidney or ureter, or is due to retention of urine and infection of it, the primary infection must be found and relieved before improvement in the bladder will be permanent.

Cholecystitis, Acute and Chronic

In biliary infections, three series of 5 injections each of methenamine may be given with 5 day recesses between. Using a solution of 31 grs, 5 cc, 2 to 5 cc are given in the first series, 5 to 6 cc in the second, and 6 to 8 cc in the third series. Chiray believes that methenamine is the best of the so-called "biliary antiseptics."

Other Infections

Methenamine (hexamethylenetetramine), when placed in the blood, says Robert¹ persists there for several hours, penetrates into the cerebrospinal fluid, and is eventually eliminated by the urine and the bile. He believes that it is theoretically advisable to treat not only urinary and biliary infections, but septicemias, and brain and spinal cord lesions, with injections of methenamine.

In Prevention and Relief of

Post-Operative Simple Urinary Retention

Methenamine 31 grs (40%) is given in postoperative cases when it is thought that urine will be retained, and after catheterization to prevent further necessity. It is contra-indicated in nephritis, after operation upon the bladder, and when there is any mechanical obstruction in the urinary tract, such as stricture.

Physiological Action

Retention is caused by toxic substances inhibiting the motor nerves to the longitudinal muscles of the bladder or to a cramp of the sphincter muscle. Methenamine in 31 grain strength is sufficient to irritate slightly the atonic bladder wall by the formation of formaldehyde which activates vesicle peristalsis. This in turn produces spontaneous micturition.

Dose

Content of one 5 cc size ampule of methenamine 31 grs is given intravenously about 2 hours after operation. If in exceptional cases this is ineffectual 10 cc may be given the following day.

1 Robert, M. P., Rev. de Med. 52:592, 1935.



DRUG SPECIMENS TO BE ANALYZED ARE SUBJECTED TO HIGH VACUUM
DESICCATION TO REMOVE TRACES OF MOISTURE

METHENAMINE-SALICYLATE COMPOUND

Indications

Urinary tract inflammations and associated infections, to reduce fever and provide analgesia Used in gonorrheal rheumatism, cystitis, and pyelitis

Methenamine has been used generally only as a bacterio-static in urinary infections Yet some clinicians have given the drug in more general infections and have seen good results from it Clinical improvement, for example, has been reported in infectious diseases of the spinal cord and upper respiratory tract

Advantages

Up to this time methenamine remains the most commonly used drug in inhibiting the continuance of infections in the urinary tract despite the advent of newer chemicals The necessary acidity for this use is normally encountered in the kidneys and bladder

The salicylates and their action are too well recognized to need more than a passing remark here There would be little need to give them intravenously if the patient could be assured of their benefit by mouth without stomach and intestine functional derangement But they retard the digestive enzymes, a one per cent solution being enough to check the action of ptyalin in reducing starch to maltose and dextrose To accompany the salicylate with sodium bicarbonate as we are told to do often does not pacify the outraged stomach

Description

20 cc contain

Methenamine	1 4 Gm (20 grs)
Sodium Salicylate	1 4 Gm (20 grs)
Sodium Dimethylarsenate	1 0 Gm (15½ grs)

Physiological Action

Methenamine-Salicylate Compound, by inducing dilatation of the skin vessels and production of profuse perspiration, causes a fall of the temperature usually present Grateful analgesia is produced in painful conditions such as rheumatic fever It aids in building up the patient's ability to combat infection and through its arsenic content tends to prevent the exhaustion that follows such conditions

To accomplish its purpose methenamine must liberate formaldehyde for it is the formaldehyde that effects bacteriostasis This

conversion can only take place in the presence of acid and the body secretions are normally alkaline. But such acids do permeate many diseased areas especially those of localized inflammations. According to Scheffel the degree of acidity found in these pathological states is enough to form formaldehyde and the administration of methenamine for its systemic effect is not empirical but rational.

Supplied

20 cc size ampules, box of 6
20 cc size ampules, box of 25
20 cc size ampules, per 100

Code Word

ALLOCATE
BOLIVAR
CAPTOR

Dosage

20 cc may be administered daily until symptoms have subsided. Then intervals are gradually lengthened to 20 cc every second day, then every third day. If the urine is not acid, means should be taken to make it so. Tablets of Methena-Phosphate or ammonium chloride may be given by mouth before the injection for the purpose.

NEO-GUISODIDE

Indications

Bronchial affections, including bronchial pneumonia and certain cases of asthma.

Contraindications

- 1 Tuberculosis, excepting a few cases of the fibrinous type
- 2 Such patients as may have a hypersensitiveness to iodides

Advantages

In some bronchial difficulties that are inclined to hang on and usurp the strength of the patient in spite of prolonged treatment of the older type, it has been noted clinically for nearly twenty years how readily Neo-Guisodide intravenously appears to initiate recovery.

In respiratory cases that are serious or may become so quickly Neo-Guisodide has time after time been the anchor to windward. When it enters the body via the vein it begins to work at once and saves minutes and hours that are sometimes precious.

Description

20 cc contain	
Guaiacol	0.04 Gm ($\frac{1}{8}$ gr.)
Creosote	0.04 Gm ($\frac{1}{8}$ gr.)
Sodium Iodide	2.07 Gm (32 grs.)
Dextrose	2.4 Gm (37 grs.)
Sodium Chloride	0.08 Gm (1.23 gr.)
Glycerine	0.8%
pH adjusted with sodium hydroxide	

The 10 cc ampule contains just one-half the above amounts. That is, the cc content is identical. It is intended primarily for the treatment of children.

*Supplied**Code Word*

20 cc size ampules, box of 6	ALLIANCE
20 cc size ampules, box of 25	BLANCHE
20 cc size ampules, per 100	CALMLY
10 cc size ampules, box of 6	ALLOE
10 cc size ampules, box of 25	BLANCHE
10 cc size ampules, per 100	CALUMET

Physiological Action

The effects of the drugs in Neo-Guisodide are anesthetic, antipyretic, absorbent, expectorant and alterative.

A small percentage of the guaiacol and creosote administered is recovered in the bronchial secretions, saliva and in the expired air from the lungs. This offers the possibilities of local soothing action with stimulation of tissue cells of the lungs and bronchial tubes.

Iodine aids resolution by inhibiting the normal preventive of resolution (anti-trypsin). Diseased tissue present to a more or less extent in all respiratory conditions takes up more iodine than healthy tissues. Such diseased tissue is eliminated by the aid of iodine, by partial absorption and digestion and through the increased flow of mucus.

Therapeutic Notes with Dosage

BRONCHIAL ASTHMA

If, in the complex etiology of bronchial asthma, the constriction is finally brought by sensitization of the bronchioles from bacteria

or from bacterial proteins the case is one to which Neo-Guisodide is adapted. In 300 cases observed by Nenagh protein of bacteria was present in about 30 per cent.

Cases due to sensitization from ingested food proteins, circulatory disorders or pollens should receive their proper study and specific treatment if any. Where this is not possible Neo-Guisodide has been used to ameliorate or temporarily overcome the distressing symptoms. Acute cases respond best. The advantage over the use of epinephrine is that when effective freedom from paroxysms lasts several days to weeks.

The physician will wish to remove any foci of infection to obtain permanent improvement in asthmatic patients.

Dose in asthma

The usual initial injection of 10 cc is given. If the patient is severely distressed 20 cc should be injected 12 hours later. 20 cc may then be given daily and the interval gradually extended.

BRONCHITIS

Long standing cases of bronchitis frequently offer stubborn resistance to ordinary forms of treatment. Drugs which have enough strength to remove existing infections and relieve inflammation are not likely to be tolerated in sufficient quantities when taken through the stomach. This disadvantage is eliminated through the use of Neo-Guisodide intravenously.

It acts in bronchitis as an anaesthetic and antipyretic. The creosote and guaiacol constituents are soothing to the bronchial membranes, easing the cough soon after its administration. The iodine in addition to more positive actions, liquefies the bronchial secretions, thus aiding in the elimination of the offending substance.

The tonic action of sodium iodide is one of its valuable qualities in the treatment of bronchitis. After treatment with Neo-Guisodide the discharge from the nasal membrane will be profuse but this will cease as soon as the offending substance has been removed. Some chronic cases will not be permanently cured, but will be relieved for an indefinite time.

Dose in bronchitis

Usual initial dose of one-half ampule, then 20 cc doses every

2 to 3 days for 6 to 12 days In some cases it may be sufficient to administer Neo-Guisodide at longer intervals

BRONCHIAL PNEUMONIA

Neo-Guisodide in bronchial pneumonia, tends to overcome congestion through increasing and liquefying the bronchial and lung secretions It also reduces the viscosity of the blood and improves the circulation, disencumbering the bronchi and usually relieving patients of asphyxia Its constituents aid the respiration by raising the ratio between the volume of oxygen inspired and the carbon dioxide expired

While there is no doubt of the stimulating effect of guaiacol and creosote upon the bronchial mucous membrane, it is improbable that when given by mouth they reach the pulmonic tissue in sufficient concentration to have direct bactericidal properties As included in Neo-Guisodide and given directly into the blood stream, there is certainly more reason to expect direct antagonism to the offending organism

The employment of guaiacol and creosote is warranted by clinical data We do not advocate Neo-Guisodide in lobar pneumonia, but it is worthy of note for its bearing on less crucial respiratory diseases that various British writers,^{1 2 3} have found that in pneumonia these two drugs reduce temperature, hasten crises, reduce toxemia

Dose in bronchial pneumonia

In ordinary cases of bronchial pneumonia, 20 cc of Neo-Guisodide should be administered daily until improvement occurs In severe cases, it may be administered twice daily for short periods This, too, depends upon each individual case

After the first injection results are usually noticeable Pain and soreness in the chest are somewhat relieved, the fever is reduced, and the patient may rest Four to six injections are usually followed by the relief from symptoms

1 Maj R McKinlay, J Royal Army M C, 61 54, 1933

2 Ashton Fletcher, Brit M J, 1919 1, June

3 J E B Wells, Brit M J, 1919 6, April

NEO-LACMANESE

Non-Specific Stimulator of Resistance

Indications

Neo-Lacmanese acts only by stimulating the body's own resistance to infection, hence the many varied conditions in which it is used. Some of these in which relief has often been reported are acute arthritis, eye infections such as iritis, and corneal inflammations, certain skin diseases including acne vulgaris and some types of eczema, purulent local infections, many pelvic infections of women, and gonorrhea.

Contraindications

Advanced heart disease, extreme arteriosclerosis, and alcoholism are contraindications to non-specific protein therapy. If there is a history of hypersensitiveness—serum sickness, asthma or urticaria—Neo-Lacmanese may be given cautiously, beginning with a fractional dose.

Neither old age, infancy, nor the complication of pregnancy is considered a contraindication to its use in appropriate dosage.

Advantages

The bodily comfort and well-being that has come to be expected after Neo-Lacmanese injections are ascribed to body processes induced by both proteins and metallic colloids which tend to effect detoxication of the patient as well as destruction of the invading organism. In Neo-Lacmanese, these two types of non-specific agent are prepared and combined so as to reinforce one another and they accomplish results impossible to either one alone.

Because of the greater convenience to the physician and lack of discomfort to the patient from a smaller bulk, Neo-Lacmanese offers certain distinct advantages over other milk preparations.

It is not necessary to limit its entrance into the body to the gluteus maximus. Injections may be made in the muscles of the arm or muscles elsewhere. Thus to therapeutic efficiency is added convenience and simplicity for the physician administering, convenience and little or no pain for the patient receiving treatment.

Any reaction following the injection is less than from vaccines and is often absent. There is customarily no heightened temperature—little discomfort at the site of the injection. There may be aches throughout the body, their degree, like the other evidences of reaction, being largely dependent on the extent of the infection.

Description

Neo-Lacmanese is a true solution derived from cow's milk. It includes protein 40 mgs with which is incorporated the metallic colloidal substance, manganese butyrate 1.5%.

Physiological Action

Placing foreign proteins and metallic colloids in the tissue by injection causes a cellular reaction that acts on the vascular system through the vasomotor nerves. The effect is a plasma-activation which seems to occur especially in the reticulo-endothelial system consisting of cells particularly in the liver, spleen, bone marrow, and the cutaneous connective tissue.

It appears that the essential immunization is effected by the calling into the blood stream of enzymes or anti-bodies which act adversely upon bacteria in preparing them for ingestion by phagocytes. There is also a decrease in the permeability of cellular membranes which decreases the susceptibility to toxins. The stimulated liver action is noteworthy as it aids in restoring the patient to normal through removal of toxins from the circulation after they have been absorbed from the infected locality.

Phagocytes have been shown to engulf bacteria after the latter have been acted upon by the body enzymes, to digest them and to cause their elimination. This is the work to which Metchnikoff and his followers have primarily attributed the remedial effects of non-specific therapy.

Supplied

1 cc size ampules, box of 12
1 cc size ampules, box of 25
1 cc size ampules, box of 100

Code Word

DEVIATE
TANNERY
ENERGY

Dosage

The average adult may be given 1 cc of Neo-Lacmanese intramuscularly every one or two days in acute cases, in chronic conditions an injection every two to three days. In asthmatics and others that may be hypersensitive it is advisable to limit the first dose to about $\frac{1}{2}$ cc and to be guided in future injections by the effects.



THE KJELDAHL procedure for determining nitrogen verifies the milk protein content of Neo-Lacmanese and Neo-Lactpro In the above the initial digestion of proteins is taking place

NEO-LACTPRO

Indications

Infections amenable to non-specific protein therapy

Contraindications

Alcoholism, cardiac disturbances, and extreme arteriosclerosis
Given cautiously to those hypersensitive to proteins

Advantages

Neo-Lactpro carries the advantages of a condensation of milk protein in a small bulk of solution. No discomfort and usually no reaction accompany its administration.

Physiological Action

The theory behind non-specific protein therapy is that recovery from any bodily infection is in the end accomplished in the diseased cells themselves. If the invading bacteria are overpowering, the affected cells will succumb and the life of the body be in danger through progress of the disease. But if natural resistance is of a high order the particular cells affected may die and yet surrounding cells will throw up a barrier through which the germs cannot pass. The object of injections of Neo-Lactpro is to stimulate production of antibodies to resist the "foreign" protein and indirectly the infection. It has been found that normal cells are to a certain extent profoundly stimulated.

The chain of effects following non-specific protein injections was described by Hench of the Mayo Clinic after observations on 10,000 injections in 2500 cases. In his opinion, the protein is withdrawn from the blood stream by the cells of the reticulo-endothelial system and fixed, especially in the liver, gastrointestinal tract, and spleen. In these there is a prolonged stimulation or dilatation. At the same time there is a compensatory, opposite fixation in the activity of the peripheral vessels, shown by a lessened metabolic activity of skin and muscles and constriction in the vessels. Later a complete reversal of this condition occurs in both the splanchnic and the peripheral areas with a return to normal equilibrium.

Supplied

1 cc size ampules, box of 12
1 cc size ampules, box of 25
1 cc size ampules, box of 100

Code Word

DEVOUT
TANDEM
ENGRAVE

Dosage

The initial injection may be $\frac{1}{2}$ cc with 1 cc in subsequent doses, given every one to two days in acute diseases and at two to three-day intervals in chronic conditions. Injections may be made in the muscles of the arm, buttocks, or elsewhere.

Therapeutic Notes

EYE INFECTIONS

A number of investigators have commented on the fact that gonococcal ophthalmia responds to non-specific protein therapy to a greater extent than other eye conditions. This may be due to the fact that diplococci have little resistance to a moderate increase of temperature. It has been said that a temperature above 102°F will kill gonococci in the incubator within 12 hours. This suggests that they are unable to withstand a similar temperature in the human body for any great length of time. There is general agreement that among chemotherapeutic agents milk and its derivatives cause the most uniform rise in body temperature.

SKIN DISEASES

The efficacy of non-specific protein therapy in the treatment of skin conditions is well established.

Of erysipelas it is claimed that 1000 cases were treated with injections of milk by Chabier.¹ The result in general was a lowered temperature with marked improvement in delirium and nervous symptoms. The favorable cases were said to respond in 2 to 4 days. If improvement, however, was not seen with the first injection, later injections had no effect.

Lowe, of Great Britain, also reported good effects in this condition from non-specific protein therapy and thought results were especially marked when injections were made in the tissue near or around the lesions.

¹ Chabier, J. de Med. de Lyon, p. 713, Dec. 5, 1930.

PHENOLSULPHONPHTHALEIN**For Use in Test of Renal Function***Description*

Ampules contain 1 cc plus of the monosodium salt of phenol-sulphonphthalein, in physiological salt solution Each cc contains 0.006 Gm (1/10 gr) of the dye

Advantages

Over 90% of phenolsulphonphthalein injected passes out with the urine This accounts for its service in rapidly estimating the ability of the kidneys as a whole to perform their function The method is most satisfactory for the physician and the hospital where laboratory facilities are limited, where quick information is desired, or when a check of other tests of renal function is required The method is not an index of either tubular or glomerular activity alone It is of particular value in estimating the kidney function of patients with progressive Bright's disease

Supplied

- 1 cc size ampules, box of 12
- 1 cc size ampules, box of 25
- 1 cc size ampules, box of 100

Code Word

DESPOTIC
THIMBLE
ENDLESS

To Test the Renal Function

The patient completely empties the bladder and drinks 250 cc of water Thirty minutes later 1 cc of 'phthalein (6 mgs) is given intravenously Voided specimens of urine are taken in 15 and in 30 minutes after giving the dye The reading may be made with one of the standard colorimeters

This modification of the earlier technic is less time consuming and more accurate, as the significant feature of the test is a high initial output The normal minimum is 25%

When but one kidney is suspected, ureteral catheterization is performed and the urine from the two collected separately Increasing damage to the functioning tissue is shown mainly by a decrease in the excretion of dye within 15 minutes If a longer period is awaited the excretion may be shown as normal until at least half of the functioning kidney tissue has been destroyed In congestive heart dysfunction with a diminished blood flow through the kidneys, the excretion of 'phthalein is so delayed as to be of little value in estimating the function On the other hand, in cir-

rhosis of the liver, the 'phthalein output may be abnormally high because of the inability of the damaged liver to excrete the dye. In nephrosis the output of dye may be normal late in the course of the disease.

Technic of Estimation

The urine collected is diluted with 200 cc of water and rendered alkaline by the addition of 10 cc or more of sodium hydroxide 5%. The urine is then further diluted with water to make 1000 cc. A portion of the diluted urine is filtered and a test tube filled with it. Its color is then compared with a standard solution in a colorimeter such as one of the box colorimeters, and the approximate percentage of the dye excreted in a given time is estimated.

PICROTOXIN

Indicated

As an antidote for barbiturate poisoning

Contraindications

In cases of poisoning from opiates, especially morphine, picrotoxin not only produces no awakening, but hastens death.

Advantages

Each dose of picrotoxin is usually followed by some signs of recovery—return of reflexes, moving of eyelids, swallowing. The physician can thus very accurately adjust the dosage to the response and to the further need of the medicament, picrotoxin is, however, a potent drug and requires a physician to administer it.

Physiological Action

Picrotoxin is an antidote for barbiturate poisoning because it is primarily a medullary stimulant, increasing respiration and vasomotor tone. It is believed to have also a cerebral awakening effect.

Toxic doses of barbiturates cause damage to lung tissues. This damage has been found to be physiologically counteracted by picrotoxin.¹ The longer the poisoning effect of the barbiturate is allowed to continue, the more chance there is for tissue change and secondary infection to occur.

Supplied

Each cc contains 2 mgs picrotoxin in physiological salt solution

10 cc size ampules, box of 6

10 cc size ampules, box of 25

Code Word

ANKLE

BOTANY

Dosage

As picrotoxin is a physiological antidote for barbitol compounds, the amount of the latter determines the amount of picrotoxin required for effect and that will be tolerated. The first injection is $2\frac{1}{2}$ cc (5 mgs) injected intravenously. If no signs of awakening are seen (improvement in muscle tone, circulation, and respiration) another $2\frac{1}{2}$ cc should be given in about 30 minutes. Ten mgs are often sufficient, but if the patient does not rouse from lethargy within 20 minutes after the second dose, 5 cc (10 mgs) may then be given, this dose being repeated as necessary. Patients have required as much as 150 to 200 mgs in 48 hours to produce the desired effect.² Treatment is continued until coma is overcome.

Signs of toxicity should carefully be watched for. If the patient twitches, medication should cease until he again becomes lethargic, when it can safely be resumed in smaller doses. Because the toxicity of picrotoxin is greater the lighter the degree of narcosis, appearance of signs of toxicity may logically be regarded as showing that the antidote is taking effect.

Therapeutic Notes

The effect of picrotoxin varies with the type of barbiturate taken, the depth of narcosis, and the length of time elapsing before treatment is instituted.

The so-called "short-acting" barbiturates include, among others, the ethyl 1-methyl-butyl and the amyl-ethyl derivatives of barbituric acid (pentobarbital and amytal respectively). Medication against these may be pushed vigorously and given in large doses, action must be quick. To counteract overdoses of the di-ethyl and the phenyl-ethyl barbituric acids (barbital and phenobarbital) which produce prolonged narcosis and slight anesthesia, smaller doses of picrotoxin are necessary, administered more often.¹

There is definitely a limit to the amount of any barbiturate which picrotoxin can counteract. However, it should be tried in all cases, for it always prolongs life and this added period may allow the necessary time for the patient's resistance to overcome the poisoning.

1 Maloney, A. H. and Tatum, A. L., *J. Phar. & Exp. Ther.* 44 337, 1932

2 Murphy, W. S., Connerty, H. V., Connolly, A. J., & Koppányi, T., *J. Lab. & Clin. Med.* 22 350, 1937

PROCAINE HYDROCHLORIDE SOLUTIONS

For local anesthesia and nerve blocking

Physiological Action

Procaine is the least toxic of local anesthetics in general use. It causes a quick response but its duration is short, averaging one hour.

Epinephrine lengthens the effect by constricting the small vessels to retard diffusion of the procaine from the local area. It also reduces any toxicity from large doses.

Serious reactions from procaine are extremely rare. But lethal doses of procaine are followed by heart and respiratory failure. Recent experiments indicate that the heart depression is secondary to the respiratory failure. In experimental use, the addition of epinephrine to procaine diminishes toxicity because it stimulates respiration. The blood pressure is improved. In the presence of disturbances of the autonomic nervous system, or of the circulatory system, however, as in thyrotoxic individuals, epinephrine may cause untoward symptoms similar to circulatory collapse.

Procaine in the dog is converted into non-toxic end products, mostly by the liver, and these are eliminated slowly by way of the kidneys. Theoretically, the indiscriminate administration of large amounts of procaine to individuals with severe liver damage is not advisable.

Supplied

Dissolved in physiological salt solution	Code Word
1%, 2 cc size ampules, box of 12	DISPLAY
1%, 2 cc size ampules, box of 25	TESTATOR
1%, 2 cc size ampules, box of 100	ENTRAP
2%, 1 cc size ampules, box of 12	DISPOSE
2%, 1 cc size ampules, box of 25	THOUGHT
2%, 1 cc size ampules, box of 100	ENTREATY
2%, 2 cc size ampules, box of 12	DISSOLVE
2%, 2 cc size ampules, box of 25	THRASH
2%, 2 cc size ampules, box of 100	ENTRY
2%, 5 cc size ampules, box of 6	DISTAFF
2%, 5 cc size ampules, box of 25	TEAMSTER
2%, 5 cc size ampules, per 100	ENTWINE

Dosage General

In surgery $\frac{1}{4}$ to $\frac{1}{2}$ percent solutions are infiltrated For nerve block 1 to 2 per cent solutions are used

IN SPINAL ANALGESIA

In operations in which sacral or caudal block anesthesia is practicable, as in operations on the perineum, prostate, bladder, urethra, external genitalia, and rectum, it is generally agreed that infiltration analgesia produced by procaine solution is the safest method It is said that it does not carry with it the risks of injection into the spinal canal The method has been in successful use since 1900, but has not come into more general use apparently because the technic is not more commonly mastered

Dosage

According to Sims,¹ a single injection into the sacral canal properly done will cause an anesthetic block of the pairs of the second, third, fourth, and fifth sacral nerves and the single pair of coccygeal nerves Analgesia is complete when these nerves are effectively blocked because they are all at the pudendal and coccygeal plexuses

From 60 to 100 cc of procaine hydrochloride 1% are injected about 20 minutes previous to the operation Patients to be operated upon at 8 in the morning are given an enema at 4 P M At 9 P M a dose of one of the barbiturates is administered by mouth Morphine $\frac{1}{4}$ gr and atropine $\frac{1}{150}$ gr are given hypodermically 30 minutes before the operation

IN SIMPLE SPRAINS

The treatment of sprains by injections of procaine is of importance especially in athletic centers where sprains are common

The theory was propounded that simple sprains are not due to gross injury of the ligaments, but that the functional impotence which follows the injury is an immediate consequence of the excitation of the nerve supply, in which the articular ligaments are rich Procaine injected into the injured ligaments was found to arrest the pain which in most instances does not return This has been practiced since 1932 by Leriche of France, who reports that results have been consistently excellent, traumatized joints responding often to a single injection² The same procedure has been resorted to by others with corroboration of the results Only simple,

recent sprains in which there is no fractured or torn ligament are suitable for the treatment, joint sprains are not included

Technic

It is not difficult to administer but careful asepsis and an understanding of the anatomy of the affected joints are required

Either 1 or 2% procaine may be used, the weaker solution being preferable for diffuse sprains where larger volume is required and 2% solution for more localized injuries. The skin over the injured area is made aseptic. A 27-gauge needle is inserted parallel to the skin, enough solution injected to raise a wheal. The needle is reinserted perpendicular to the skin, the solution being pushed ahead of the needle as it is advanced to the ligament. The penetration of the ligament will be known to the operator by increased resistance and the patient will know because of some pain. The ligament itself is then injected at the site of maximum tenderness, care being taken that the needle does not enter the joint. From 2 to 10 cc of the procaine solution are injected in the traumatized area, depending upon the extent of the injury. As much as 30 cc of 1% solution have been used in certain cases. If pain has not desisted after 15 minutes, a second injection is made. If the injury is in the ankle, a pad is placed in the heel of the shoe to relax the traumatized ligament. The patient is told to walk or otherwise use the member as he would normally.

PROCAINE WITH EPINEPHRINE

In 1 cc size ampules containing

Procaine hydrochloride	2%
Epinephrine	1 25,000
Physiological Salt Solution	q s

The surplus space in the ampules is filled with an inert gas to inhibit decomposition of the epinephrine

Supplied

1 cc size ampules, box of 12	DISTANT
1 cc size ampules, box of 25	THRIFTY
1 cc size ampules, box of 100	ENVOY

Code Word

1 Sims, H. V., South Med J 28 908, 1935

2 Leriche, Rene, and Arnulf, G., Am J Surg 32 45, 1936

QUI-ARSENATE

Indications

Malarial infections, especially pernicious cases and patients in coma

Contraindications

Marked idiosyncrasy to quinine and an inflammatory condition of the internal ear, also heart disturbances, pregnancy and in senile persons

Advantages

Qui-Arsenate combines the two most effective drugs in the treatment of malaria in a sterile solution ready for intravenous use. It allows the maximum dose to be launched against the plasmodia at the most effective moment. It is prompt in its action, therefore the agent of choice in the treatment of pernicious malaria.

While quinine has the power to destroy malarial parasites, it does not provide a method of neutralizing the toxins caused by the destruction of red corpuscles, to increase the hemoglobin or replace red blood corpuscles. Qui-Arsenate in addition to its specific antagonism to the plasmodia stimulates renewed red blood cell production and increases the patient's power of resistance to the disease.

Description

Each 22 cc of Qui-Arsenate contains

Quinine dihydrochloride	0.65 Gm (10 grs)
Sodium dimethylarsenate	0.50 Gm (7¾ grs)
Urethane	0.19 Gm (3 grs)

Supplied

22 cc size ampules, box of 6	ADJUS I
22 cc size ampules, box of 25	BEDECK
22 cc size ampules, per 100	CLERK

Code Word

Dosage

An initial dose of 5 cc should be administered. As there is no substitute for quinine, it may be continued, even though there is a mild reaction. If, however, the reaction is severe, quinine treatment should be discontinued. Quinine will be tolerated intravenously in some cases where it will not be tolerated when given by mouth.

The contents of one 22 cc ampule of Qui-Arsenate should then be given 30 to 60 minutes preceding the expected paroxysm

In estivo-autumnal malaria injections may be made at intervals of twelve to twenty-four hours After five days the fever will usually be under control

Therapeutic Notes

An injectable quinine is indispensable in patients who are comatose and unable to take the drug by mouth It also may be the only treatment effective enough to be depended upon in pernicious cases

Caution

Quinine given intravenously tends to cause a fall in blood pressure, accompanied in some cases by transitory vertigo and nausea This may be mitigated by permitting the solution to enter the blood stream slowly—about 2 cc per minute An ampule of epinephrine may also be available for use

Some capable men experienced in malarial treatment consider the intravenous injection of quinine dangerous and therefore unsuited to the customary case Others equally capable and experienced have concluded¹ that the intravenous route is the best The method should not be used carelessly

1 Escher & Villequez, Presse Medicale, Paris 39 453

QUININE AND UREA HYDROCHLORIDE

In the Treatment of Hemorrhoids

Indications

The ambulatory treatment of internal and “prolapsing” hemorrhoids

Contraindications

External hemorrhoids—those originating below the ano-rectal line, the presence of polypi, a fistula, tuberculosis, ulcerations, syphilis, or carcinoma Pregnancy and severe inflammation of the area are contraindications and it is useless to inject subcutaneous thrombosing hemorrhoids

Advantages

The method is the simplest and most effective treatment of internal hemorrhoids—superior to surgery—as it is comparatively free

from pain, entails no loss of time, and can be readily done in the physician's office

Howard, after treating 5,000 cases, states that the method proves to be unassailable as to accidents or serious complications and that it is absolutely painless

Description

Quinine and Urea 5% with procaine hydrochloride 2% in 2 cc size ampules

Physiological Action

Decrease in the size of the hemorrhoid occurs only several days after injection, but relief of prolapse is almost immediate, occurring after the first injection in about half the cases. Upon injection of the quinine and urea, the mass becomes firm and it is to this increased rigidity that the relief of prolapse is due. Fibrous tissue is later formed. This constricts the blood vessels and with the shutting off of the supply of nourishment, a localized anemia and consequent atrophy of the mass are brought about.

Supplied

Code Word

- 2 cc size ampules, box of 12
- 2 cc size ampules, box of 25
- 2 cc size ampules, box of 100

DESPAIR
TEAMLESS
ENSIGN

The Technic

Any hypersusceptibility of the patient to quinine should be learned before treatment.

The "piles" are brought into view by aid of a suitable speculum and are cleansed with alcohol 70%. The needle is inserted deeply—not superficially—beneath the mucosa of the hemorrhoid, but distinctly above the internal sphincter (Howard says as high as possible.) The injection should never be made into the body of the pile, and it is best to inject around the vein rather than into it. Such perivenous infiltration will give the best sclerotic effect providing the needle is well within the tissue.

It is recommended that injection be made through a tuberculin or other narrow syringe fitted with a 26-gauge $\frac{3}{8}$ -inch dental needle on an extension. If these are not available, a 2 cc syringe with a 25-gauge $\frac{3}{8}$ -inch needle will serve.

About 1 cc of solution is introduced in each hemorrhoid, depending on its size Up to 4 cc may be injected at a sitting into alternate halves of the lumen Injections may be repeated at three to four day intervals until completed

If the mucous membrane becomes discolored during the injection, the solution is being placed too near the surface, and if continued a slough may result The needle should be withdrawn and treatment of that hemorrhoid carried on later

Bismuth suppositories may be inserted for a few days following the injections to isolate the mucous membrane during passage of fecal matter

1% Solution for Local Anesthesia

Used as a local anesthetic in minor surgical operations It is slowly effective, but the anesthesia continues for several hours and in some cases several days It is therefore of particular value in urethral, rectal, anorectal and other operations, where, without such anesthetic, the affected parts would be painful during the process of healing

Supplied

- 1 cc size ampules, box of 12
- 1 cc size ampules, box of 25
- 1 cc size ampules, box of 100

Code Word

DECLARE
THUNDER
EMBARK

Dose

For anesthesia of sub-mucous tissues as in rectal operations a 1% solution is infiltrated For injection beneath the skin as in circumcisions, a strength of not over 0.5% is used because of the local sclerotic tendency of Quinine and Urea

For Intramuscular Injection

This dosage is not used as a local anesthetic, but as part of the treatment of malarial infections and in other conditions where quinine is indicated

Supplied

Each 2 cc contains 0.49 Gm ($7\frac{1}{2}$ grs) Quinine and Urea Hydrochloride

	<i>Code Word</i>
2 cc size ampules, box of 12	DEEPLY
2 cc size ampules, box of 25	THWART
2 cc size ampules, box of 100	EMBERS

Dose

One ampule content as necessary Intramuscular injections of quinine salts especially quinine and urea are preferably made in the gluteal muscles of the buttocks—deeply No solution should be allowed to leak near the surface as the needle is withdrawn

QUININE DIHYDROCHLORIDE

Indications

Malaria

A few years ago a standard treatment of malaria was advocated which called for daily treatment for 3 or 4 months This has been superseded as a result of recent investigations One observer found that the average quinine treatment necessary to control the quartan form of infection was 35 days, the benign tertian, 48 days, malignant tertian, 47 days To bring about a disappearance of the plasmodia from the peripheral circulation it is necessary to give adequate quinine for 87 days in quartan, 45 in benign tertian, and 66 days in malignant tertian malaria It seems that the duration of treatment has no influence on whether or not a relapse will occur It is logical, therefore, to concentrate on the relief of the acute attack and to treat relapses if and when they occur

Collins among others found no advantage in long treatment The number of relapses shortly after long treatment was less, but recurrences the following year were greater among those who had received long treatment The Malaria Committee of the Health Section of the League of Nations, quoted by Hill and Olavarria, recommends as minimum treatment of benign tertian malaria, one gram of quinine hydrochloride orally, daily for five days The opinion of the committee is that larger doses over longer times are not more effective The present tendency is consequently toward shorter treatment

MALARIAL TREATMENT IN CHILDREN

Those experienced in malaria have it impressed upon them that "a child is not just a small adult" Symptoms of malaria in children

differ Children exhibit convulsions instead of chills and may show cyanosis although fever is often absent or may be irregular The most evident symptoms are those of the digestive tract consisting of vomiting in about 80% of the cases and diarrhea in 25% Children develop immunity slowly and because of resultant lack of resistance, the dose of quinine must be proportionately much larger than in the adult If the quinine cannot be given by mouth, it should be injected intramuscularly

For Intramuscular Injection

Supplied

Each cc contains 0.49 Gm ($7\frac{1}{2}$ grs)

1 cc size ampules, box of 12

1 cc size ampules, box of 25

1 cc size ampules, box of 100

Code Word

DEFEAT

THROTTLE

EMBRACE

Dose

Contents of one ampule every four hours until temperature drops

For Intravenous Injection

Supplied

Each 5 cc contains 0.49 Gm ($7\frac{1}{2}$ grs)

5 cc size ampules, box of 6

5 cc size ampules, box of 25

5 cc size ampules, per 100

Code Word

ADMIT

BEFALL

CLIENT

Each 20 cc contains 0.65 Gm (10 grs)

20 cc size ampules, box of 6

20 cc size ampules, box of 25

20 cc size ampules, per 100

ADOPTED

BEFOUL

CLIMAX

Dose

The time and intervals of intravenous injections of quinine vary greatly, being dependent on the character of the plasmodium concerned They may be made about an hour before an expected chill Injections should not be given during a paroxysm Intravenous injections should be made very slowly and with observation of the blood pressure

SALSOCOL

Indications

Rheumatic fever, for prompt relief of all its symptoms

Contraindications

The customary inhibitions to intravenous therapy apply—circulatory abnormalities and more definitely, patients having a limited tolerance for the drugs

Advantages

A ready and effective preparation which guarantees the full physiological and prompt effect of the drugs included. Intended particularly for cases which have not responded to other treatment or those of long standing.

The addition of colchicine to this formula increases its value in cases associated with gout. Solis-Cohen and Githens are of the opinion that colchicine acts well in rheumatoid arthritis, particularly when given with salicylate.

Description

This solution is very similar to Salsodide, but has a larger amount of each constituent and in addition includes colchicine.

20 cc contain

Sodium salicylate	2.07	Gm (32 grs.)
Sodium iodide	2.07	Gm (32 grs.)
Sodium dimethylarsenate	0.32	Gm (5 grs.)
Colchicine	0.0006	Gm (1/100 gr.)

Physiological Action

Analgesic, antipyretic and eliminative through diuresis and sweating. The arsenic content gives it stimulative and tissue-building properties. The favor in which colchicine has long been held in the treatment of gout and rheumatism with a background of gout is based almost wholly on empiricism. The drug presumably obtains an effect through counterirritation.

*Supplied**Code Word*

20 cc size ampules, box of 6	ABSOLUTE
20 cc size ampules, box of 25	BABOON
20 cc size ampules, per 100	CARMINE
10 cc size ampules, box of 6	ABSOLVE
10 cc size ampules, box of 25	BACHELOR
10 cc size ampules, per 100	CARNIVAL

Therapeutic Notes with Doses and Intervals

RHEUMATIC FEVER

Some cases of rheumatism which will not respond to Salsodide will respond promptly to Salsocol because of the stronger dosage and the addition of colchicine. This solution is not, however, as well tolerated as Salsodide. Then, too, if the smaller amount of each drug included in Salsodide will bring satisfactory results, it is unnecessary and inadvisable to use a stronger solution. There are, however, cases which require this dosage, and it has proved popular.

ARTHRITIS

In atrophic arthritis salicylates may be used routinely to relieve pain and, as anemia is usually present, iron, arsenic and strychnine have been recommended. Vitamins A, B, C, and D are of value in building up the general resistance.

Hypertrophic arthritis as it occurs in older people may be symptomatically relieved of pain by the salicylates and thyroid extract will often improve the circulation and favorably increase the metabolism if the latter is low.

Caution

In veins of which the lumen is small it is obvious that the flow of blood passing the point of injection is comparatively reduced.

To avoid placing a concentrated solution in the vein but on the contrary one that is diluted below the point where irritation to the vein wall may occur simply requires that the drugs join the blood stream a little at a time. When Salsocol is administered, the best technic is that in which the solution is given at the rate of 2 cc a minute and in patients with hypersensitive or with small veins, it is desirable to reduce the rate to 1 cc per minute.

Dose and Interval

Initial injection of 5 cc, followed by the therapeutic dose of 20 cc at intervals of 1 to 4 days, depending upon the severity of the symptoms and the patient's tolerance to the solution.



MODERN CHEMISTRY has introduced new methods which require the use of special apparatus. Two examples are illustrated. The assembly on the left determines moisture in chemicals or pharmaceutical preparations, while that on the right estimates the ammonia content of compounds.

SALSODIDE

Indications

Rheumatic fever and related infections, for the relief of pain and fever, and immobility and effusions in joints

Contraindications

None, except a hypersensitiveness to the salicylates, iodides or arsenic

Advantages

Digestive disturbances that so frequently follow oral administration of the salicylates are eliminated

Some patients will not tolerate a sufficient amount of salicylates if given orally, to show any perceptible improvement, from rheumatism. Others will show some improvement, but will not tolerate a sufficient amount to bring complete relief. The dosage, if given orally, must be large. The usual dosage is 15 grains five times a day, and in severe cases, it is recommended that this be greatly increased if the patient will tolerate it.

When given intravenously, as in Salsodide, a comparatively small amount of the drug is necessary. Compare the 25 grains of sodium salicylate contained in Salsodide, which is administered at intervals of two to three days, with the 75 to 200 grains taken daily by mouth. In giving the salicylates by mouth therapeutic and toxic doses do not lie far apart. In utilizing the direct, blood stream route, the smaller doses which may be used and yet obtain optimum concentration of the drug, leave a greater margin of safety.

Description

20 cc contain

Sodium salicylate	1.62 Gm (25 grs)
Sodium dimethylarsenate	0.19 Gm (3 grs)
Sodium iodide	0.97 Gm (15 grs)

The 10 cc ampule is for use when a reduced dose is desirable. It contains just one-half the above amount of drugs.

Physiological Action

Analgesic, antipyretic and eliminative through diuresis and sweating. Salsodide reduces induration of the tissues and has a tonic action.

Supplied

	<i>Code Word</i>
20 cc size ampules, box of 6	ADRIFI
20 cc size ampules, box of 25	BEGET
20 cc size ampules, per 100	CLIMF
10 cc size ampules, box of 6	ADULI
10 cc size ampules, box of 25	BEGGAR
10 cc size ampules, per 100	CLOUDY

Therapeutic Notes

Salsodide combines the therapeutic action of two effective drugs used in combating rheumatic infections with arsenic to improve the general tone of the body tissues

When Salsodide is administered intravenously, the salicylate, iodine and arsenic constituents are brought into more direct contact with affected areas. They are not changed by the acids of the stomach nor by the alkalies of the intestines, nor is there a loss of time in assimilation. Relief from pain, partial or complete, is usually immediate.

Dose and Interval

Adult In severe cases, the initial injection is 10 cc followed in twelve to twenty-four hours by 20 cc. Twenty cc doses should be administered daily until the symptoms are under control, then 20 cc at two to three days until the infection is eliminated. In moderately severe and mild cases an initial injection of 10 cc is followed by 20 cc doses at 3 to 4 day intervals.

Other therapeutic measures to build up the patient's resistance and to prevent subsequent attacks should follow treatment.

Children At five years, initial injection of 2 to 3 cc, followed by 5 cc doses. At ten years, initial injection of 5 cc followed by 10 cc doses. At twenty years the full therapeutic dose—20 cc. The frequency of the injection will depend upon the severity of the patient's symptoms and tolerance to the drugs.

ACUTE RHEUMATIC ARTHRITIS

On the premise that arthritic infections basically develop from nutritional dysfunctions, some clinicians add injections of Ferro-Arsen as a blood builder to make more permanent the curative

action of Salsodide. The contents of one 20 cc ampule of Salsodide and one 10 cc ampule of Ferro-Arsen are given alternately at intervals of four to five days. Salsodide may be discontinued when pain is overcome and infection is removed. It may be necessary to continue the Ferro-Arsen for some time. After six injections of Ferro-Arsen 10 cc have been given, treatment may be continued by injections of Ferro-Arsen 5 cc at intervals of three to seven days, depending upon the case.

OTHER STREPTOCOCCIC INFECTIONS

Some cases of influenza are accompanied by acute streptococcic infection, and such may well receive this solution. Physicians have reported the successful use of Salsodide in isolated cases of sciatica tonsillitis, measles.

GONORRHEAL RHEUMATISM

The focus of infection should receive direct attention, and then when Salsodide is administered something approaching the spectacular in therapeutic effects is likely to result.

Methenamine given with salicylate is recommended in many cases to act upon organisms in the genito-urinary tract, presumably the seat of the primary infection. This may be done conveniently by administering Methenamine-Salicylate Compound.

Dose and Interval

In severe cases the initial injection is 10 cc followed by 20 cc doses daily until symptoms are under control. The course of treatment should extend over such a period as to assure the physician that he has attained all the benefit of which the drugs are capable.

Moderately severe and mild cases. The initial injection of 10 cc, followed by 20 cc doses every two to three days. Five minutes may be devoted to the injection of the 20 cc ampule contents to advantage.

RHEUMATIC FEVER— ACUTE, SUBACUTE, AND CHRONIC

In acute and chronic articular rheumatism and acute rheumatic fever, the action of Salsodide is about the same.

As is commonly accepted, there is usually a local infection which causes these conditions. Obviously, the first consideration should be removal of such local infection. However, the extraction of teeth and removal of tonsils are far from panaceas for rheumatic fever, even though no other local infection is apparent. Infection which has been carried to the joints or tissues must be eliminated.

Before this has been accomplished, a new infection may take place— especially if removed tonsils cannot now help. Removal of the teeth will not remove streptococci present elsewhere. It follows that whether or not the extraction of teeth is essential, Salsodide may well be employed to combat infection disseminated throughout the body.

It is now generally felt that endocarditis or pericarditis is not modified by salicylate therapy, nor is the development of subcutaneous nodules prevented.

SODIUM CACODYLATE

Indications

Where arsenic is desired for its tonic effect in debilitated conditions.

Physiological Action

There is a firmly held belief that arsenic is of value in the treatment of debilities including both the hypochromic and hyperchromic, or secondary and pernicious, types of anemias, but the process by which its benefits may occur is largely unknown.

The cacodylates are pentavalent organic arsenicals. In the pentavalent form, the arsenic atom is saturated and the compound is non-toxic when introduced into the system. It is so slowly decomposed that substantial doses may be given with nothing but favorable effects. This contrasts with the trivalent, saturated form which is more toxic.

For Intramuscular Administration

1 cc size ampules

0.065 Gm (1 gr), box of	12
0.065 Gm (1 gr), box of	25
0.065 Gm (1 gr), box of	100
0.19 Gm (3 grs), box of	12
0.19 Gm (3 grs), box of	25
0.19 Gm (3 grs), box of	100
0.32 Gm (5 grs), box of	12
0.32 Gm (5 grs), box of	25
0.32 Gm (5 grs), box of	100
0.45 Gm (7 grs), box of	12
0.45 Gm (7 grs), box of	25
0.45 Gm (7 grs), box of	100

Code Word

DETAIL
TEACHER
ENDURE
DEFILE
TEETHING
EMPIRE
DEFORM
TEMPERED
EMPLOY
DEFRAUD
TENABLE
EMPRESS

2 cc size ampules

0 97 Gm (15 grs), box of 12	DEFRAY
0 97 Gm (15 grs), box of 25	TEMPEST
0 97 Gm (15 grs), box of 100	EMPOWER

For Intravenous Administration

5 cc size ampules

	<i>Code Word</i>
0 32 Gm (5 grs), box of 6	ADVENI
0 32 Gm (5 grs), box of 25	BEHAVE
0 32 Gm (5 grs), per 100	COBWEB
0 45 Gm (7 grs), box of 6	ADVISE
0 45 Gm (7 grs), box of 25	BEHEAD
0 45 Gm (7 grs), per 100	CODGER
0 97 Gm (15 grs), box of 6	ADVOCATE
0 97 Gm (15 grs), box of 25	BEHOLDER
0 97 Gm (15 grs), per 100	CODDLE

IN BULK CONTAINERS

Sodium Cacodylate in the most frequently used strength is furnished in rubber capped vials for use when low cost of arsenical medication is of first importance. Although an agent to prevent bacterial contamination is included in the solution, this style of container is not ideal because air is admitted each time a needle is inserted and because the solution is in contact with the rubber stopper.

30 cc size vials with 0.49 Gm (7½ grs) in each cc, with phenol 0.5%

	<i>Code Word</i>
Single vial	AMPUTATE
Box of 6 vials	AMOROUS
Box of 25 vials	BOLSTER

SODIUM CITRATE 2½%

Indications

For use in indirect blood transfusion to prevent coagulation. A rapid fall of hemoglobin to 50 or less with a pulse rate of 120 or more is an indication for transfusion more dependable than the blood pressure. To hemophilia, purpura hemorrhagica, and to certain other hemorrhagic diseases, blood transfusion is especially adapted.

Advantages

Lundy and Tovell of the Mayo Clinic reported in 1934¹ that the indirect method using citrate had been used by them as an anti-coagulant for 18 years in over 16,000 blood transfusions and had become a favorite. In 1935² they stated that reactions following the use of citrated blood had occurred in but 7% in a series of over 1000 transfusions, many of these being in cases in which group 2 donors gave blood to group 1 recipients and in patients with severe blood dyscrasias.

After the greater simplicity permitted in the technic of obtaining and reinjecting citrated blood, probably its greatest advantage is that it may be preserved under refrigeration. Under some circumstances this may permit keeping on hand typed blood ready for emergencies. Jeanneney and Viero³ used blood that had been refrigerated for as long as 3 weeks. Before administration, the blood is filtered through silk cloth of such texture as to restrain solids larger than 100 to 150 microns in diameter.

Description

Each 50 cc of the 2.5% solution of sodium citrate contains 1.25 Gm (19.4 grs) of the drug, in sterile redistilled water. The ampules have a tip at each end which allows rapid emptying of the contents.

The contents of one ampule are sufficient to prevent the coagulation of 500 cc (one pint) of blood. Full technic for the indirect method of blood transfusion will be supplied upon request.

Physiological Action

The citrates through their affinity for calcium will retard or prevent the coagulation of the blood during transfusion without changing any of its other qualities. Soon after its entrance into the circulation of the recipient the coagulating efficiency of the transfused blood is fully re-established, probably by elimination of the sodium citrate through the kidneys.

Symptoms of hemolytic shock following blood transfusions are, according to Hesse and Filatov,⁴ due to histamine-like bodies released from a breaking down of red blood cells. The material thus released leads to dilatation of venous capillaries and to spasm of arterioles. An early and characteristic symptom of this reaction is a severe backache resembling renal colic. It is claimed that upon

its occurrence the patient may be promptly relieved by the immediate reinfusion of compatible blood

Supplied

Code Word

50 cc size ampules, each	ANCHOR
50 cc size ampules, per 6	AFFABLE
50 cc size ampules, per 25	BEHOOF
50 cc size ampules, per 100	COGENT

- 1 Lundy, J S and Tovell, R M, J Mich State Med Soc 33 592, 1934
- 2 Lundy, J S and Tovell, R M, Proc Staff Meet Mayo Clin 10 270, 1935
- 3 Jeanneney and Viero, Gaz hebdomadaire de Bordeaux, No 50 (December 16), 1934
- 4 Hesse, E, and Filatov, A, Ztschr f d ges exper Med 86 211, 1933

SODIUM IODIDE

Indications

—for the use of Sodium Iodide read like a cross section from a catalog of diseases The reasons for such diversity of uses is shown by the brief reminder of the physiological action of the drug given below

Contraindications

Tuberculosis, toxic goiter

Physiological Action

An antiseptic expectorant and acts as an electrolyte upon the colloids of the blood Sodium iodide increases elimination of nitrogen compounds and other waste products It aids glandular activity, increases resolution of diseased tissue, lowers viscosity of the blood, and favors circulation It facilitates diapedesis, or the free passage of blood and leukocytes through the walls of the blood vessels

A small part of the iodide injected remains in the blood, chiefly in the red cells The remainder is widely distributed, the largest amount finding its way to the thyroid gland and the liver

In arteriosclerotic conditions the value of iodide may be due partly to improved blood flow in the minute arteries and veins supplying nutriment to the walls of the larger vessels, the improvement being brought by reduced viscosity of the blood

By inhibiting unsaturated fatty acids in the blood, the iodides allow proteolytic ferments to attack diseased tissues The dissolution of the cells is thus not caused by toxic action of iodine, it

is due to chemical enzymes normally present but made absent Iodides by this indirect means affect all cells, causing an increased catabolism and destruction of the nucleins The effect varies with different cells, according to their character and vigor Cells altered or weakened by disease resist less because iodine attacks and is absorbed by these before it affects the healthy Intolerance, when not due to hypersensitiveness, is thus at times a sign of approaching recovery The extinction of diseased cells stimulates the re-active reproduction of healthy tissue, hence the term "alterative" is applied

Acute poisoning by iodides is rare, but after large doses dangerous toxicity has occurred Chronic poisoning or iodism is more frequently seen The degree of susceptibility varies in different persons but may vary in the same individual at different times Usually, tolerance is easily induced by small doses of 0.05 to 0.1 Gm, increased to 1 Gm or more Even after such preparation, most persons again show intolerance when a daily dosage of 3 to 6 Gm is reached Large quantities by mouth, unless habituation has been developed, are likely to irritate the stomach and intestines and to cause symptoms in the skin Usually the first indication of iodism is a metallic taste accompanied by soreness of the teeth and gums, a burning sensation in the mouth and throat and mucous membranes, and increased saliva

Supplied

When the 31-gram dosage is used, the more dilute solution contained in the 20 cc size ampule is always the one to be preferred

2 Gms (31 grs)

20 cc size ampules, box of 6
20 cc size ampules, box of 25
20 cc size ampules, per 100

Code Word

AFFRAY
BELONG
COMBAT

2 Gms (31 grs)

10 cc size ampules, box of 6
10 cc size ampules, box of 25
10 cc size ampules, per 100

AFFLUENT
BELLE
COLUMN

1 Gm (15½ grs)

10 cc size ampules, box of 6

AFFIRM

10 cc size ampules, box of 25

BEI IEI

10 cc size ampules, per 100

COLOR

Dosage

In diseases most frequently met, 31 grs are injected intravenously every two to three days. However, in some acute conditions it is necessary to give one or two injections daily.

SODIUM SALICYLATE AND SODIUM IODIDE

Indications

Rheumatic fever and certain other bacterial infections

Advantages

A sterile solution of sodium salicylate and sodium iodide, void of gastric disturbances and ready for instant use

Description

Each 20 cc contains sodium salicylate 1 Gm (15½ grs) and sodium iodide 1 Gm (15½ grs)

Physiological Action

The drugs are analgesic, antipyretic, eliminative and resolvent

Supplied

20 cc size ampules, box of 6

Code Word

AGAPE

20 cc size ampules, box of 25

BENEFIT

20 cc size ampules, per 100

COMRADE

Therapeutic Notes

Sodium salicylate and sodium iodide are being used with good effect in rheumatic fever of different forms, in certain bacterial infections, in pain producing and other distressing symptoms not to be reached by medication by mouth.

In severe cases, the dose is 20 cc every twenty-four hours until symptoms are under control, then 20 cc every two to four days, depending upon the results obtained

SODIUM SALICYLATE

Indications

Acute and chronic rheumatic fever, particularly when the digestive apparatus is intolerant

Advantages

Void of digestive disturbances Prompt in therapeutic action

Physiological Action

Analgesic, antipyretic and eliminative through diuresis and sweating There also may be local circulatory effects that are beneficial In the past the salicylates have been spoken of as specific in rheumatic disease This is not the case They will shorten an attack and lessen the proclivity to recurrence They probably do not prevent an inclination toward endocarditis and pericarditis

Although the salicylates cannot be credited with specificity in rheumatic fever, they do appear to have some affinity for the disease that other drugs lack Sodium salicylate will cause a prompt subsidence of fever with substantial or complete reduction of pain and inflammation in the joints Yet how this is accomplished is unknown Narcotics will relieve the pain but not the inflammation Other antipyretics will reduce the temperature, but are not as effective in allaying the other symptoms

Supplied

2 Gms (31 grs)

20 cc size ampules, box of 6

20 cc size ampules, box of 25

20 cc size ampules, per 100

Code Word

AFOOT

BENEATH

COMPASS

1 Gm (15½ grs)

10 cc size ampules, box of 6

10 cc size ampules, box of 25

10 cc size ampules, per 100

AFFRONT

BELOVED

COMET

Dosage

In severe cases inject 20 cc every twelve to twenty-four hours until pain and the major symptoms are under control, then 20 cc every two to three days for a month or six weeks

SODIUM SALICYLATE and IODIDE with COLCHICINE*Indications*

For the relief of symptoms of rheumatic fever, more especially chronic forms and cases of a gouty nature

Description

Each 20 cc contains	
Sodium salicylate	1 Gm (15½ grs)
Sodium iodide	1 Gm (15½ grs)
Colchicine	0.0006 Gm (1/100 gr)

*Supplied**Code Word*

20 cc size ampules, box of 6	AMITY
20 cc size ampules, box of 25	BOARDER
20 cc size ampules, per 100	CAPTAIN

Therapeutic Notes

Colchicine is added to the more frequently used agents, salicylate and iodide for the convenience of physicians who wish to include this old drug in their treatment

SODIUM THIOSULFATE*Indications*

An antidote to arsenical poisoning. Clinically it appears to benefit mercury and bismuth intoxications, although experimentally such benefit has not been confirmed.

As an auxiliary to arsphenamine treatment it enables the physician to secure a maximum curative effect from a minimum of arsenic. In persons hypersensitive to arsphenamines, sodium thiosulfate conduces to toleration of the arsenic.

To reduce edema and itching in eczema, it is injected intravenously in conjunction with control of diet.

Advantages

In itself a practically non-toxic drug (in animals 2 grams per kilo have been used), of multiple usefulness in conditions associated with arsenical treatment. As a matter of insurance, sodium thiosulfate, in sterile solution ready for injection, should be in the emergency kit, on the supply shelves of every doctor's office, as well as in the drug room of the hospital.

Description

The concentration of sodium thiosulfate (sodium hyposulfite) in general use is 1 gram in 10 cc. Some physicians require a large dose for intravenous administration in the treatment of certain skin diseases. For their use a 20 cc ampule containing 64 grams is available.

Supplied

4 15 grams (64 grs.)	<i>Code Word</i>
20 cc size ampules, box of 6	AMBER
20 cc size ampules, box of 25	BITUMEN
20 cc size ampules, per 100	CALABASH
1 gram (15½ grs.)	
10 cc size ampules, box of 6	AGED
10 cc size ampules, box of 25	BENUMB
10 cc size ampules, per 100	CONCAVE

Dosage

Injected intravenously, the dosage depends upon the severity of the poisoning. Severe cases should receive, in general, an injection of 4 grams daily for three or four days, followed by injections of the same dose at two to four day intervals to effect. Or the later injections may consist of one to two grams daily. Single injections as large as 7.8 grams have been used.

Average cases may receive an injection of 1 gram daily for three days, the fourth day, 1.3 grams, the sixth day, 1.7 grams, the eighth day, 2 grams.

Therapeutic Notes

ACCUMULATION OF ARSENICALS

Cases which do not respond to further treatment because the spirochetes have developed a tolerance to arsenic stored in the tissues may be broken of the "Wassermann fastness" by recessing arsphenamine injections, giving a course of sodium thiosulfate and then returning to the active antisyphilitic medication.

IN ARSENICAL INTOXICATIONS

None of the stated modes of action of the drug completely explains its varied effects. The former explanation of its protection of the kidneys and other tissues from arsphenamine in hypersensitive patients or overdosage is that its sulfur element is yielded

to the arsenic to form an insoluble sulfide. The latter is then slowly eliminated. However, in some cases of arsphenamine dermatitis when large initial doses of thiosulfate were given, the dermatitis temporarily increased in severity and then gradually disappeared, suggestive that the thiosulfate oxidizes and liberates arsenic stored as albumoids in the tissue cells.

Dosage

In this use of the drug the first doses of the thiosulfate should be small— $\frac{1}{2}$ gram (5 grs), progressively increasing to 2 Gms (31 grs). Intravenous injections are made daily for four days, then every second day.

TO PREVENT ARSENICAL REACTIONS

To prevent arsphenamine reaction in case of idiosyncrasy, sodium thiosulfate may be given in doses of 10 to 15 grains a few minutes before or after the arsenical. Dale and Voegtlin, as well as others, concluded that the effectiveness of arsphenamine is not impaired by this use of thiosulfate.

When sodium thiosulfate is injected approximately at the same time as arsphenamine in hypersensitive patients, the avoidance of toxic reactions is possibly due to the prevention of excessive formation of albumoids and their contact with cells of the tissues.

Dosage

1 Gm of sodium thiosulfate is injected intravenously a few minutes before or after an average dose of arsphenamine.

Acute Eczema

Good results have come from 1 Gm of the drug given every second day. The patient usually responds after four or five injections, sometimes less. An average of twelve should be given.

Local applications to alleviate the discomfort are often desirable. Resorbenz Lotion described elsewhere in this book is prepared for that purpose.

Diet

To avoid a recurrence of the symptoms the diet will require attention. Throne and his co-workers limit both the carbohydrate and chloride intake. They allow plenty of vegetables with the exception of beets, rice, beans and potatoes.

OTHER SKIN DISEASES

In some localities large doses of sodium thiosulfate are given intravenously in skin diseases chronic in nature, with the same purpose as previously mentioned, to reduce edema and pruritis.

In chronic eczema 2 grams are given as the initial dose and then 4 grams are given at five-day intervals for an average of eight injections.

In psoriasis 4 grams are given at five-day intervals for an average of fifteen doses. Injections are always made very slowly with the patient lying down.

STRONTIUM BROMIDE

Indications

To allay unrest in hysteria, anxiety neuroses and psycho-neurotic disorders, also used in some itching skin conditions.

Contraindications

Malnutritional states such as typhoid fever or cerebral arteriosclerosis.

Advantages

Lebedjew showed the high degree of toleration of patients to concentrated solutions of bromide when given intravenously. One series of twenty-four cases of simple eczema reported gives the following results. In two cases complete relief was obtained in two days, in eighteen cases itching disappeared in one week. In two, itching returned despite treatment, and in two others treatment failed completely. The strontium form of bromide is usually preferred as being more effective clinically, although experimentally it is more toxic than sodium bromide.

Description

A sterile solution of Strontium Bromide containing 1 gram ($15\frac{1}{2}$ grs) in 10 cc.

Physiological Action

The bromide salts depress the central nervous system with the exception of the medulla, lower the activity of the mind, motor cortex and reflex excitability. The action on the cerebrum is opposite to that of caffeine and the action on the cord is the reverse of that of strychnine. Average doses do not affect circulation.

The bromides partly replace chlorides in the cells, resulting in a cumulative effect. If 25 to 30 per cent of the chlorides are replaced symptoms of bromide intoxication occur. Therefore, therapeutic action of the bromides may be increased by abstention from chlorides and toxicity overcome by increasing the chloride intake. However, if there is as much as 300 mgs of bromide in the blood, the sodium chloride is contraindicated.

The effect of the drug upon pathological skin conditions is obtained through its action upon the nerves, which is stated to consist in depression of the paths of communication and shown by a reduction of reflexes and the diminution of acuteness of perception.

Supplied

10 cc size ampules, box of 6
10 cc size ampules, box of 25
10 cc size ampules, per 100

Code Word

ALIGHT

BISHOP

CALDRON

Dose

An initial injection is 3 to 5 cc given intravenously. This is followed by 10 cc, usually given every second day, but may be given daily. Two to six injections may be sufficient. Other cases will require as many as fifteen.

THE INJECTION TREATMENT OF HYDROCELE AND SPERMATOCELE

On the overcoming of hydrocele by the injection of sclerosing solutions Solley¹ has said "The variability of the results and the high percentage of complications resulted in a well justified fear of the treatment among patients and conservative surgeons alike. Recently, however, the rapid advances in chemistry have produced sclerosing materials which are exceedingly safe and reliable in their obliterative action and if cases are properly selected and a careful technic followed, the results are so uniformly satisfactory, both to the patient and doctor, that we believe this treatment will soon largely replace surgical operation for hydrocele."

Originally suggested by Phylbus of England, the treatment was later reported on by Kilbourne and Murray,² Ewell, Sargent and Marquardt³ and also Keitzer⁴ cite series of cases. These groups all used quinine and urethane as the sclerosing solution. Sodium morrhuate may be utilized but is painful.

Indications

Indications for the injection treatment of hydrocele are cases of the simple, chronic non-infected type. A hydrocele that does not remain relieved by simple tapping may be injected with a sclerosing solution. Spermatoceles that are non-infected and not associated with epididymitis are subject to the treatment.

Contraindications

Acute cases and those of children are, according to most workers, best treated by simple tapping. "Intermittent" hydrocele, common in children, should not be injected. In these the fluid visits the peritoneal cavity, and the sclerosing solution would accompany it. Tuberculous epididymitis is a bar and should be suspected if the sac does not collapse. When the aspirated fluid is bloody, surgery is called for.

The Effects

The treatment overcomes the collecting of fluid in the tunica vaginalis of the testicle evidently by thickening and organizing the subserous fibrous tissue. It is thought that the fibrosis of the tunic wall resulting from the injections interferes with the blood and lymph supply of the endothelium and in this way prevents the fluid formation. In a tunica opened a month after the third injection the

testicle, epididymis and blood vessels, grossly, appeared normal

Thirty-nine patients with hydrocele were injected by Ewell and his associates. One case was followed for two years and several for one year without recurrence. The technic permits little or no pain. The treatment does not require the patient to interrupt work.

The Technic with Quinine-Urethane

The field is prepared as for a major operation. A small area on the lower front of the scrotum lying over the cyst is infiltrated with procaine 1% solution. An 18-gauge needle to which a 30 or 50 cc syringe is attached is inserted under the skin of the anesthetized area and then into the hydrocele cavity. The needle is pointed upwards and is inserted through the skin at a 45° angle. The sac is emptied by aspiration. The syringe is then detached and the withdrawn fluid examined, preferably by an assistant. Fluid from a hydrocele is usually clear, distinctly alkaline, with a large amount of albumin. Fluid from a spermatocele is hazy, mildly alkaline, has a low specific gravity, and a small amount of albumin. There will be a few dead spermatozoa unless an opening to a seminiferous tubule is patent, in which case live sperm may be found.

The scrotum is palpated for tuberculosis and epididymitis and care taken that the needle does not slip out of the sac as the scrotum contracts. A 5 cc syringe containing 2 to 4 cc of quinine hydrochloride and urethane is then attached to the needle, a small amount of fluid is aspirated to make certain the needle is still within the sac, and the sclerosing fluid is then instilled. Collodion is applied to the site. A suspensory is supplied to the patient. A sterile technic must be assured since the operation is done in an area easily contaminated.

One injection may be sufficient, but usually a second is required, which may be made one or two weeks after the first.

Possible complications are infection which may call for incision and drainage, an overlooked epididymitis which requires the usual treatment.

The solution used is the same as that described later for varicose veins. Reactions in persons sensitive to quinine have been relatively mild.

- 1 Solley, F. W., *Surg. Clin. N. A.* 16: 867, 1936.
- 2 Kilbourne and Murray, *Calif. & West. Med.*, July, 1932.
- 3 Ewell, Sargent, and Marquardt, *Wisconsin Med. J.* 34: 451, 1935.
- 4 Keitzer, Walter A., *J. Mich. State Med. Soc.* 35: 168, 1936.

THE INJECTION TREATMENT OF VARICOSE VEINS

Solutions Available

Inveride, Quinine-Urethane, Sodium Morrhuate and Sodium Salicylate-Urethane

Indicated in

Superficial, painful varicosities with or without difficulty in functioning, those complicated with ulcers and also prominent varices that are desired treated by the patient for esthetic reasons

Contraindicated in

Active or latent phlebitis, obstruction of deep-lying veins, arterial dysfunctions such as thromboangitis obliterans and in cardiac disease Distant foci of infection should be cleared up if possible before injections of varicosities to avoid bacterial migration

Quinine-Urethane should not be used during pregnancy nor in individuals who are markedly hypersensitive to the drug During menstruation injections should be recessed

Advantages

According to U S Veterans' Bureau Medical Bulletin (6 850-853, 1930) the advantages of the injection method are

- 1 Avoids general anesthesia
- 2 Prevents loss of time
- 3 Cosmetic results are better
- 4 Avoids post-operative pain
- 5 Simple and inexpensive equipment
- 6 Avoids cost of hospitalization

Douthwaite, whose experience in giving over 2,000 injections had been largely gained with quinine, wrote "With the exception of certain cases outlined I know of no case of varicosity of the venous system in the limbs or anal canal, no matter how severe, which will not respond to the sclerosing effect of a suitably chosen solution"

The almost negligible occurrence of embolism is shown by McPheeter's statistics of 0.00754 per cent mortality following injection treatment compared with 0.53 per cent, or about seventy times as great from surgical intervention Following operation there is also 0.41 per cent mortality from secondary causes such as pneumonia

Physiological Action

The injections do not produce immediate clotting of the blood in the varix. The effect is an irritation of the endothelium and vein wall—a chemosis of the intima. This is followed by the deposit of fibrin which forms adhesions to the walls of the vein. Dissections of portions of veins treated by the method show that the chemical thrombi cling firmly to the walls of the vessel which are permeated by a bloody gelatinous mass. There is therefore no fear of embolism because the clotting eventually occurring is rooted in the wall of the vein.

A further effect three or four days after the injection is reddening of the skin along the course of the vein treated, with some swelling and slight tenderness to the touch. Later the vein shrinks and becomes a cord of fibrous tissue.

The Choice of Solution

A solution whose sclerotic ability is about midway between the weakest and the most severe is Inveride composed chiefly of invert sugar and sodium chloride. It is adapted to a large number of cases. Quinine and urethane and sodium salicylate have led the field in Europe. Perhaps the majority of operators in the U. S. prefer sodium morrhuate.

It has been usual for the advocates of each new solution as it has been announced, to state that it causes no sloughs. Probably these assurances have been based on the observation of too few cases. With long use it seems proven that any solution sufficiently caustic to be of value in sclerosing veins will also cause a slough if it is accidentally placed in tissue surrounding a vein.

INVERIDE

Inveride combines the sclerosing properties of chloride with those of hypertonic sugar and utilizes the invert form of the latter because of its lower viscosity. This permits the use of a small gauge needle. A local anesthetic, benzyl alcohol is a distinct advantage.

It is reported practically free of pain when injected in the vein. No veins have failed to be obliterated in treatment with it, although some require several injections.

10 cc contain

Invert sugar	3.50 Gms
Cane sugar	0.25 Gm
Sodium chloride	1.00 Gm
Benzyl alcohol	0.15 Gm

Inveride is Supplied

Code Word

10 cc size ampules, box of 6	ALLEGE
10 cc size ampules, box of 25	BLAME
10 cc size ampules, per 100	CALIPH

Dosage for Inveride

From 2 cc to 10 cc may be placed in a single varix, depending upon its size 20 cc or more may be injected at one sitting

The complete technic is sent with the solutions

QUININE-URETHANE

Is rapid in its effect, and there is no pain at time of injection There may be considerable pain later, and anaphylactoid reactions have followed

2 cc contain

Neutral quinine hydrochloride	0 266 Gm (4 grs)
Urethane	0 133 Gm (2 grs)

Quinine-Urethane is Supplied

Code Word

2 cc size ampules, box of 12	DEPLUME
2 cc size ampules, box of 25	TEASING
2 cc size ampules, box of 100	ENCHANT

Dosage for Quinine-Urethane

Not more than 1 cc of the solution is given at the first administration with $\frac{1}{2}$ to 1 cc to a varix A total of not more than 7 cc may be given at subsequent sittings The amount of solution required in each dilatation will need to be gauged by the results from the initial and early injections

Intervals of four to seven days elapse between treatments, and the two legs are dealt with alternately

SODIUM MORRHUATE

Sodium Morrhuate, an aqueous solution of saponified cod liver oil, is one of the popular agents in the treatment of varicose veins It is sufficiently sclerotic for most veins and is perhaps least painful

Comparative disadvantages of Sodium Morrhuate are It is less effective in preventing recurrences of varicosities because the thromboses it causes are not always solid, a few patients become sensitized to it and allergic-like reactions occur shown by skin eruptions or anaphylaxis

Sodium Morrhuate was formerly described as unstable in solution. Chemistry has overcome this for most practicable purposes, but there remains an inherent tendency of the fatty acids contained, to change with age, bringing an increased toxicity of the solution.

Sodium Morrhuate 5% is Supplied

With benzyl alcohol 2% in 5 cc rubber capped vials

5 cc size vials, box of 6

5 cc size vials, box of 25

5 cc size vials, per 100

Code Word

AMASSED

BLOOMER

CANDID

Dosage

In small and medium varices 1 to 2 cc is enough, in larger veins 3 to 5 cc will be required and a total of 10 cc may be given at one sitting. The interval between sessions is two to seven days.

SODIUM SALICYLATE WITH URETHANE

Sodium salicylate is most positive in its sclerosing effect and is best suited to large varices of the long saphenous system. A referred pain usually occurs in the ankle immediately after injection and lasts for a minute or two. If any of the solution escapes from the vein a necrosis will result unless preventive measures are taken. Yet the inclusion of urethane as an anesthetic has done much to reduce the discomfort. Because fewer injections are required and there is less recurrence of varices, this combination has returned sodium salicylate to a leading place among sclerotic solutions.

Sodium Salicylate 30% With Urethane is Supplied

5 cc size ampules, box of 6

5 cc size ampules, box of 25

5 cc size ampules, per 100

Code Word

ANATOMY

BONDAGE

CARAVAN

Dosage and Intervals for Injecting Salicylate-Urethane

The susceptibility of the patient is gauged by giving one or two cc in each of several varices for the first injection. If this is tolerated without local reaction, the next day two cc are placed in each varicose pocket. Several sites of varicosities may be attacked and a total up to 8 cc may be given at a sitting. Treatments are administered at five to seven day intervals.

VITAMIN A AND D CONCENTRATE

For Intramuscular Injection

Indicated

When quick and positive effects are required as may be necessary in some cases of pregnancy, cachexia, and bone injuries

Advantages

The intramuscular injection of Vitamin A and D Concentrate makes prompt and more certain the benefits of cod liver oil. It is economical because there is no waste of vitamins through lack of assimilation from the digestive tract.

Description

The one cc of oil in each ampule contains 13,200 vitamin A units and 1,884 vitamin D units. The respective quantities are equivalent to the vitamin A and D content of six teaspoonfuls of cod liver oil USP. Expressing the matter in another way, the concentration is equal in vitamin A and D potency to 24 times the natural cod liver oil.

Physiological Action

Vitamin A is the anti-keratinizing vitamin. Its function is to maintain normal epithelial and nerve tissues. It reduces the incidence of upper respiratory tract infections, and performs a similar service in the alimentary and urinary tracts.

The vitamin is probably not anti-infective in a general way, but infections which occur in its absence are of a localized nature and probably are secondary to cornification or keratinization of mucous membrane. It is possible that the most important duty of vitamin A is to preserve the functional integrity of epithelial surfaces and by this means to protect against the first invasions of bacteria. The earliest visible signs of disease from vitamin A deficiency in the rat were found by Richards¹ to be inflammation in the epithelial lining of the digestive tract, particularly that of the cecum. Definite keratinization, or ulceration of the stomach was present in 81 per cent of the animals. The work of Richards also showed the great persistence of infective conditions following an absence of vitamin A. Rats which appeared to be in good health after a test period except for subnormal growth were given normal diet for three to eight and a half months. Then sacrificed and examined, in addition to ulcers and peritonitis in or about the cecum.

and ulcers in the stomach and duodenum, they were found to have pleurisy and lung abscesses

Vitamin D causes the retention of calcium and phosphorus in the body tissues and regulates the same minerals in the blood and brings about their deposition in the bones. Through the parathyroids, the vitamin increases absorption of calcium from the food and reduces loss of the mineral back to the intestines. A deficiency of vitamin D, in addition to the more obvious bone and tooth defects, may be shown by irritability of the nerve system, by muscular cramps or general muscular weakness, and by irregular heart action.

Calcium and phosphorus metabolism is recognized of prime importance in pregnancy. It is now considered that vitamin D is necessary during this period, not only to effect the normal absorption and metabolism of calcium and phosphorus in the mother, but also to transmit to and deposit these chemicals in the fetus.

Supplied

	<i>Code Word</i>
1 cc size ampules, box of 12	DREDGE
1 cc size ampules, box of 25	TIMELY
1 cc size ampules, box of 100	ETERNAL

Dosage

The 13,200 vitamin A and 1884 vitamin D units which are contained in the one cc ampule content are the same as the average oral dose recommended by the USP and customarily prescribed daily.

In injecting the concentrate one cc is usually given three times weekly with good effect. When it is necessary to push the administration, injections may be given daily and later gradually reduced.

Vitamin D has been given in enormous doses by Dreyer and Reed with no permanent ill effects² in treating arthritis. Patients were started on 200,000 units daily. This was increased weekly by 50,000 to 60,000 units to 600,000 daily. At times as much as one million units were administered daily. Of 700 patients on massive doses of vitamin D for various ailments 63 developed toxic manifestations but when the treatment was discontinued for two weeks the toxic effects disappeared.

1 Richards, M. B., Brit. Med. J. 1:99, 1935

2 Dreyer, Irving, and Reed, C. I., Arch. Phys. Therap. 16:537, 1935

VITAMIN B-1 SOLUTION

Indicated

When the vitamin in concentrated form is of value as in certain cases for correction of anorexia of dietary origin, in preventing and overcoming of beriberi. There is evidence that the administration of this vitamin may be of value in pernicious vomiting of pregnancy and in alcoholic polyneuritis.

Advantages

The solution may be injected when administration of the vitamin by mouth is impracticable. This may be true in advanced deprivations when absorption from the gastrointestinal tract is prevented or is not rapid enough. Late stages of deficiency diseases are irreversible either because of intercurrent infections or from structural injury that is irreparable.¹

Description

The solution prepared from crystalline material contains in 1 cc 1 mgm vitamin B-1 equal to 300 International Units. This has been designated the antineuritic, thermolabile component of the vitamin B complex.

Supplied

- | | |
|-------------------------------|--|
| 1 cc size ampules, box of 12 | |
| 1 cc size ampules, box of 25 | |
| 1 cc size ampules, box of 100 | |

Code Word

DUCA1
TILLABLE
EXAL1

Dosage

A minimum daily intake of 300 International units of vitamin B-1 is considered necessary for the adult and 75 or more for infants. There is no evidence of harm caused by an excess. When there is heightened metabolism, as in hyperthyroidism, the B-1 requirements are increased.

In the severe avitaminosis in which intramuscular injections of the solution are indicated several injections daily may be required, until the pronounced symptoms are overcome. The injections can then be given with increasingly longer intervals as improved assimilation allows ingestion by mouth.

¹ Eddy, Walter H., and Dalldorf, Gilbert, *The Avitaminoses*, Williams and Wilkins Co. 1937, page 91.

REDISTILLED WATER

How Its Purity Is Assured

Distillation, as is commonly known, converts water to vapor and then back to water. The act excludes impurities of a solid nature. It is often not realized that it does not assure water pure enough to be injected parenterally.

Breon water receives a preliminary double distillation. Then to prevent the inclusion of gaseous impurities, the water is boiled in chemicals which annihilate the bacterial toxins by oxidation. If they were to remain, they would be capable of producing fever and other symptoms of reactions when injected.

The first portion of any water distilled usually contains gaseous impurities and the last, solid impurities. Therefore, the first and last parts are discarded and not used in Breon solutions. The redistilled water is collected in sterilized containers made of a hard, alkali-free, insoluble glass, in fact, during the entire distillation the water is in contact with nothing but Pyrex glass.

Portions of the water are chemically assayed from time to time to insure its purity and to check the efficiency of the distilling apparatus. The containers with the water are then sterilized under steam pressure and sealed with sterilized cellophane caps. Sterilized redistilled water so prepared is protected against micro-organic and atmospheric contamination.

All redistilled water contained in Breon sterile solutions is processed, and that sealed in containers for physicians' use is ampuled, the same day on which it is distilled.

AMPULES OF REDISTILLED WATER

It has been said that more unpleasant consequences in the use of sterile solutions have been due to unfit distilled water than to any other cause. Redistilled Water-Breon, prepared as described above, is in accord with the procedure of N. F. VI and passes all tests of USP XI (1937 Supplement) for purity. It is triple distilled, is ampuled under the most careful technic, sealed and sterilized under pressure. Control tests, including chemical and bacteriological, are made before packaging.

The water, in hermetically sealed, chemically resistant glass ampules, remains pure for considerable length of time and is always

ready for instant administration. The ampules are packaged each in a separate container. One, two, or more may be carried in a bag with practically no danger of breakage.

*Supplied**Code Word*

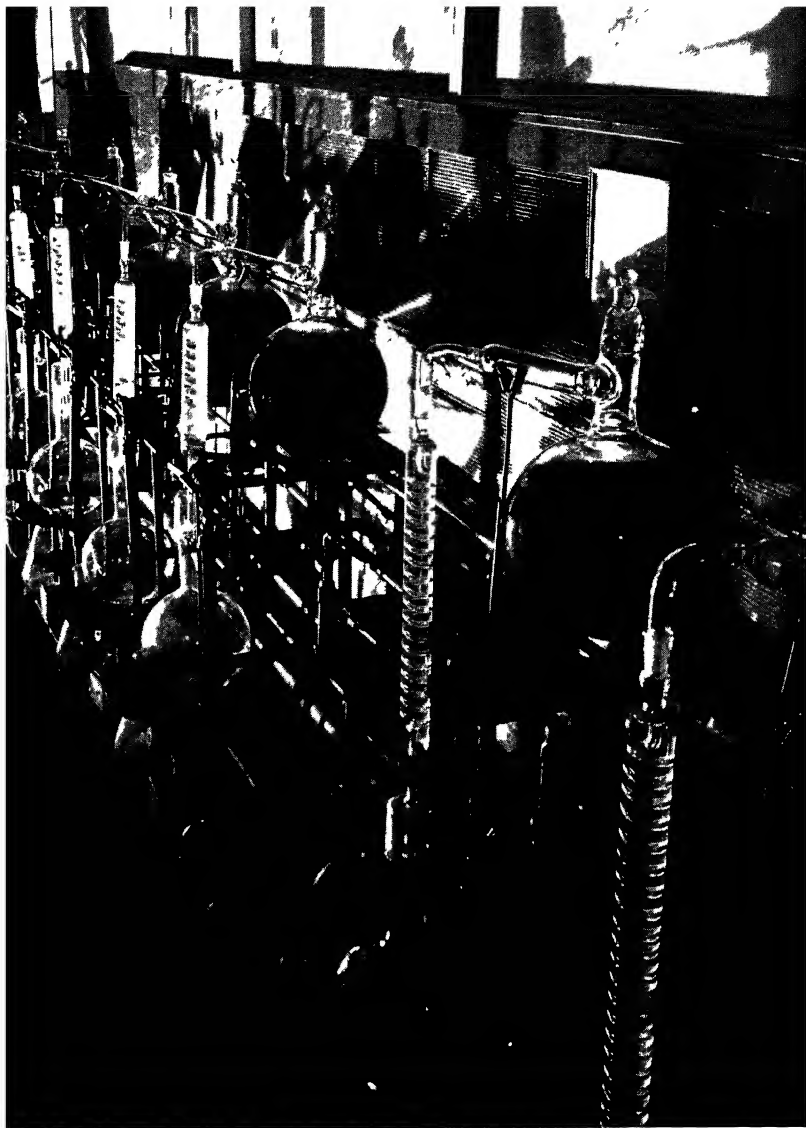
20 cc size ampules, box of 6	AGONY
20 cc size ampules, box of 25	BESTOW
20 cc size ampules, per 100	CONFESS
10 cc size ampules, box of 6	AGITATE
10 cc size ampules, box of 25	BESIEGE
10 cc size ampules, per 100	CONDUCT
5 cc size ampules, box of 6	AGHAST
5 cc size ampules, box of 25	BEQUEATH
5 cc size ampules, per 100	CONCUR

DISTILLED WATER FOR GENERAL PURPOSES

A sterile, distilled water for use where low cost is a necessity. Supplied in vials with rubber caps to allow withdrawal of varied amounts. To provide for repeated insertion of the needle through the rubber cap with admission of air to replace water withdrawn, chlorbutanol (chloroform derivative) is included as a bacteriostat. Because of its presence, this water is not recommended as a solvent for the arsphenamines. It is fully equal in purity to much of the distilled water in use.

*Supplied**Code Word*

100 cc size vials, each	ANGEL
100 cc size vials, lots of 6	AMALGAM
100 cc size vials, lots of 25	BLOCKADE
100 cc size vials, lots of 100	CANVAS
50 cc size vials, each	ANEW
50 cc size vials, lots of 6	AMBROSE
50 cc size vials, lots of 25	BLITHE
50 cc size vials, lots of 100	CANON



WATER IS DISTILLED TO EXCLUDE ALL TRACES OF SOLUBLE TOXINS,
GASES AND METALS



ORGANOTHERAPY

Distinct progress in recent years in knowledge of the internal secretions, especially in the functioning of the pituitary and the gonads, has not simplified the problem of treatment of endocrine disturbances. On the contrary, the question has become more complex. Organotherapy, the clinical phase of endocrinology, is not abreast of the physiological

Advances are being made, however, in recognizing causes and in the application of potent agents for their correction. If these develop quickly, it will be reason for rejoicing but not for surprise.

In the meantime we know of no more satisfaction that the practicing physician can obtain than from results such as are being reported to us continually by physicians using extracts of the whole glands injected intramuscularly, such as described on the next pages.

CORPUS LUTEUM SOLUTION

Suggested in

Nausea of pregnancy, abortion and sterility due to deficiency of corpora lutea

Supplied

Corpus Luteum Solution contains in each cc the soluble extractives derived from approximately 19½ grains fresh corpora lutea, with chlorbutanol (chloroform derivative) 0.25% as a preservative

Code Word

1 cc size ampules, box of 12	DAMSEL
1 cc size ampules, box of 25	TALENT
1 cc size ampules, box of 100	EASTER

Dosage

One to two cc may be injected intramuscularly daily, depending on the nature of the case. In mild conditions two to three injections a week are customary. Twelve injections are the average number required. When the object is the prevention of abortion 2 cc are injected every second day for the first 20 days of each menstrual month until the fetus is viable.

Therapeutic Notes

It appears established that there is but one hormone from the corpus luteum—progesterone—but that its purpose is multiple. It prepares the mucosa of the uterus for implantation of the fertilized ovum. It has likewise been proved that when corpus luteum solution is injected in spayed animals, it is responsible for the maintenance of pregnancy to term. The lutein hormone has an important part in the menstrual cycle. Since menstruation does not occur until, and is a result of, retrogression of the corpus luteum.

EPINEPHRINE SOLUTION 1:1000

Suggested

To stimulate the heart, to overcome shock by raising the blood pressure and for emergency relief of asthmatic paroxysms and other allergic phenomena.

Description

Epinephrine-Breon contains the water soluble active principle from the medulla of the adrenal gland, standardized to agree with U S P XI It includes as preservatives chlorbutanol (chloroform derivative) 0.25% and sulfurous acid, not more than 0.06%

Physiological Action

Intramuscular injection causes a small rise in arterial pressure and a relaxation of bronchi Intravenous injection brings an immediate and marked rise in arterial pressure

*Supplied**Code Word*

1 cc size ampules, box of 12	DEFUNCT
1 cc size ampules, box of 25	TALISMAN
1 cc size ampules, box of 100	EMPTY

Dosage

To relieve asthmatic attacks 5 to 10 minims are given intramuscularly at beginning of attack if possible It is of great service as an emergency measure in asthma, but its routine use is discouraged, especially if the relief from dyspnea which it brings is short-lived

Therapeutic Notes

TO COMBAT ALLERGIC REACTIONS

Before administering horse or other serum to a person known or suspected to be allergic, 0.5 to 1 cc of Epinephrine Solution 1:1000 may be injected intramuscularly It will not prevent but will mitigate anaphylactic shock

At the first sign of a reaction following the administration of serum in an adult, 1 cc of epinephrine should be injected intramuscularly If the symptoms are extreme, 0.2 to 0.4 cc should be injected in the vein and repeated in a few minutes if necessary To insure the required slowness of the injection of the latter potent route, the solution may be diluted with distilled water before giving

Additional means of overcoming later phases of shock are to give morphine hypodermically, calcium glucosan 10 cc slowly intravenously or calcium gluconate 10% intramuscularly. This may be repeated every four to twelve hours until the symptoms subside. If there is generalized eruption with itching the patient may be placed in a warm alkaline bath or calamine lotion applied

EPINEPHRINE-EPHEDRINE SOLUTION

Suggested

For use when the prompt effect of epinephrine is desired with the more durable action obtained from ephedrine

It consists of

Epinephrine	1 2000
Ephedrine	3%
Stabilized with sodium bisulfite	0 15%

Supplied

1 cc size ampules, box of 12	DISCUSS
1 cc size ampules, box of 25	TENEMENT
1 cc size ampules, box of 100	EPISTLE

Code Word

Dosage

Similar to epinephrine When repetition is necessary, intramuscular injections are made every 3 to 4 hours

ORCHIC EXTRACT SOLUTION

Suggested in

Functional hypogonadism due to mental strain, neurasthenia, senility and sexual excess

The injection of Orchic Extract is a measure of substitution in eunuchoidal states Its effects are but temporary and at present not well defined Testicular function being controlled primarily by the anterior pituitary and probably to a less degree by the adrenal cortex and thyroid, any comprehensive treatment must consider these other endocrines

Supplied

Orchic Extract Solution contains in each cc the soluble extracts of 3.6 Gm (55 grs) fresh testicular glands containing the interstitial cells This represents 5½ grs of the desiccated substance With chlorbutanol (chloroform derivative) 0.25%

1 cc size ampules, box of 12	DEBILITY
1 cc size ampules, box of 25	TANGIBLE
1 cc size ampules, box of 100	ELEMENT
2 cc size ampules, box of 12	DIAMOND
2 cc size ampules, box of 25	TALMUD
2 cc size ampules, box of 100	EDEN

Code Word

Dosage

Usually 1 cc is injected intramuscularly every other day until therapeutic effect is noted. The time between injections is then extended.

OVARIAN RESIDUE SOLUTION*Suggested in*

Amenorrhea due to functional causes, also regular but deficient menstruation, and dysmenorrhea due to incomplete uterine endometrium formation and resulting from a natural deficiency of estrone are properly subject to treatment by ovarian residue solution. It is also used in late development of puberty, infantilism, and in aged women. Clinical work with ovarian residue suggests greater use of this portion of the ovary in gynecological disturbances.

Supplied

Ovarian Residue Solution contains in each cc the soluble extractives of 40 grains of ovarian stroma or framework tissue without corpora lutea, with procaine hydrochloride 1% and chlorbutanol (chloroform derivative) 0.25%.

Code Word

1 cc size ampules, box of 12	DIADEM
1 cc size ampules, box of 25	TANSY
1 cc size ampules, box of 100	ENGINE

Dose

Intramuscular injections may be made every second day, with a recess during the menstrual period. If menstruation becomes excessive, the intervals between injections are lengthened.

Therapeutic Notes

Many experiments have shown that the corpus luteum normally adversely dominates the ovarian function. It also retards ripening of the ovarian follicles and while its secretion is in the ascendancy inhibits discharge of the ovum. Taking "painful breasts" or mastoplasia as an example—there is clinical evidence that the condition is associated with excessive corpus luteum and under-ovarian action.

In cases of ovarian hypo-function, ovarian residue injections may be expected to increase the menstrual flow and improve the general condition by overcoming nervousness and increasing the weight.

OVARIAN WHOLE GLAND SOLUTION

Suggested

To control symptoms of imbalanced ovarian action at the menopause, natural or surgical and in certain similar cases at puberty and adolescence

Disturbances in the natural and artificial menopause may be corrected in certain cases by large doses of ovarian extract. By supplying more than the normal estrone in the blood content, the normal action of estrone against the pituitary anterior sex hormones is reasserted. This braking action probably is not direct upon the pituitary but indirect through an adjacent sex center in the brain tissue.

Supplied

The grams cited refer to soluble extractives of the fresh glands. For example, the second strength listed below (and the most serviceable ampule) contains in 1 cc the soluble extractives of 40 grams of fresh whole ovaries including the corpora lutea. In all is included procaine hydrochloride 1% and chlorbutanol (chloroform derivative) 0.25%.

Code Word

1 cc size ampules, 30 grams, box of 12	DEWDROP
1 cc size ampules, 30 grams, box of 25	TANGENT
1 cc size ampules, 30 grams, box of 100	ENGAGE
1 cc size ampules, 40 grams, box of 12	DEBTOR
1 cc size ampules, 40 grams, box of 25	TALON
1 cc size ampules, 40 grams, box of 100	ELEPHANT
2 cc size ampules, 80 grams, box of 12	DOLPHIN
2 cc size ampules, 80 grams, box of 25	THICKET
2 cc size ampules, 80 grams, box of 100	ESSAY

Dosage

In general gynecological conditions, one ampule is given intramuscularly every two to three days. In nausea and vomiting of pregnancy, one cc is given daily. In moderately severe cases the daily injections should be continued for a week after the disappearance of the symptoms. In the very severe type the injections of ovarian extract solution are given every three hours, in conjunction with 1 gram phenobarbital sodium, also given hypodermically. If in forty-eight hours relief has not occurred, dextrose with insulin should be given intravenously.

Large doses are usually required to control menopause disturbances. The extractives of 80 grams may be given every three or four

days until the major symptoms are under control. The dosage should then gradually be reduced during a period of five or six months, the purpose being to accustom the system to the naturally reduced or absent estrone.

PITUITARY ANTERIOR GLAND SOLUTION

Suggested in

Hypofunctions associated with the ovary resulting in amenorrhea and asthenia, in failure to mature physically and sexually, also in certain cases of obesity.

Supplied

This solution contains the soluble extractives of 10 grs. of fresh pituitary anterior glands, with chlorbutanol (chloroform derivative) 0.25%.

1 cc size ampules, box of 12

1 cc size ampules, box of 25

1 cc size ampules, box of 100

Code Word

DISCLOSE

TARIFF

ELOQUENT

Dose

In most conditions and patients, one cc of the extractives of 10 grains is injected every two days, intramuscularly. In obesity as much as 2 cc daily is often used.

Therapeutic Notes

Of the varied principles thrown into the blood stream by the pituitary anterior lobe, two (prolan A, or follicle stimulating, and prolan B, or luteinizing fraction) dominate sex life, including control of ovarian activity. Another is the growth hormone of which less is known. But it is agreed that certain cells of the anterior lobe, which function best in highly acid media, manufacture such a hormone. There is support for the belief that a principle from the anterior lobe stimulates protein metabolism of the body tissues (not to be confused with protein carried in the digestive system) and that it also has to do with fixing of protein in the tissues. Thus is explained the manner in which over-activity of anterior lobe of the pituitary causes gigantism and acromegaly.

Small doses of the follicular stimulating fraction given experimentally cause graafian follicles to mature but no corpora lutea. When larger doses are given, ovulation occurs and corpora lutea are developed. Thus the gonad stimulating extract is capable of bringing about both phases of the ovarian cycle in immature animals.

The more important of the functions attributed to anterior pituitary activity are stimulation of skeletal growth, stimulation of

sexual development and ripening of follicles leading to ovulation, stimulation of lutein cells resulting in prevention of ovulation by imprisoning the ova, stimulation of the thyroid, lowering of non-protein nitrogen in blood, initiation of menstrual bleeding

IN UNDESCENDED TESTICLES

Encouraging effects have been reported from the use of pituitary anterior solutions for the correction of cryptorchidism. Results, if they are to be obtained, should be observed after four to six months' treatment when injections are made twice weekly.

PITUITARY ANTERIOR-OVARIAN SOLUTION

Suggested in

Ovarian dysfunctions evidenced by menstrual derangements, underdevelopment of the uterus and nervous instability at the menopause. Also in cases of functional sexual disorder due to inadequate secretions of the glands named.

Advantages

Pituitary Anterior-Ovarian Solution consists of the unstandardized extractives of the gland tissues themselves of the anterior lobe of the hypophysis, together with those of ovarian whole gland, including the corpora lutea. The solution is not obtained from the urine of pregnant women nor from amniotic fluid, the sources of an anterior pituitary-like principle which can be standardized, but which is not identical with the secretion from the gland itself.

The interrelationship of the pituitary anterior and the ovarian secretions in the sex life of the female led to these extracts for injection being combined. The favorable effects reported in gynecological conditions, especially those associated with the menopause, have amply justified the combination.

There is one handicap in describing whole gland extracts—it cannot be said how many "rat units" or "mouse units" they contain. There is no definite method of comparing ovarian whole solution with estrone or progesterone, or of comparing pituitary anterior solution with anterior pituitary-like solutions.

Description

2 cc contain

Pituitary Anterior	0.65 Gm (10 grs)
Ovarian Whole	2.59 Gm (40 grs)
Procaine Hydrochloride	1%
Chlorbutanol (chloroform derivative)	0.25%

The above weights are the amounts of fresh gland substances

from which are derived the soluble extractives contained in each ampule

Physiological Action

Estrone, secreted by the current graafian follicle of the ovary and also by the subsequent corpus luteum, is capable of enlarging and inducing vascularity in the uterine mucosa and vagina. This action on the uterus and the menstruation that follows is the only effect from estrone. It does not improve the physiological activity of the ovaries. It is of interest in efforts to overcome sterility that while estrone causes the engorgement of the uterus, it does not prepare for fixation of the ovum in the endometrium. This nidation depends upon the corpus luteum. The latter luteal body provides a sensitizing hormone, progesterone, which during the premenstrual phase prepares a bed for the ovum and retards menstruation. Thus the teamwork of the two ovarian hormones is a necessity in producing and maintaining the full normal sexual cycle and points to the inadequacy of any single hormone.

Supplied

Code Word

2 cc size ampules, box of 12
2 cc size ampules, box of 25
2 cc size ampules, box of 100

DISBAND
TENDRIL
EQUITY

Dosage, When Used In

AMENORRHEA

—of young women with under-developed ovaries and uterus and secondary cases that follow confinement and abortion is one of the lesser uses of this solution.

Three to four injections of 1 cc at two day intervals are usually sufficient to start a flow. The injections will need to be repeated before each expected period for several months. Large doses or long continued injections are to be avoided as they are likely to cause the opposite of the desired effect.

Thyroid substance in doses amounting to 1 or 1½ grains per day by mouth is of advantage.

MIGRAINE-MENSTRUAL HEADACHES

Reports are accumulating of the effectiveness of Pituitary Anterior-Ovarian Solution in overcoming migraine headaches associated with disturbed menstrual period and the menopause. 2 cc are injected three times per week for about four weeks. Exacerbation of the headaches may be noted during the first few injections.

NERVOUS INSTABILITY

Evidenced in minor degree by "hot flashes" The solution is under encouraging use also in more serious cases of neuroses at the menopause

Intramuscular injections every one or two days are given over a long period in this condition If too profuse menstruation follows, suitable recesses should occur

STERILITY

Regular menstruation cannot be taken as conclusively showing that the glands concerned are normal The presence before menstruation of a well developed or interval type of endometrium points to a lack or failure of the corpus luteum This in turn may be due to deficiency within the ovary itself or to a want of stimulation from the anterior pituitary gland

1 cc injections are given daily during the second half of the menstrual cycle, and the course repeated several months if necessary

PITUITARY POSTERIOR SOLUTION

Suggested

To hasten labor in second stage when pelvis is normal, increase intestinal peristalsis, remove postoperative distention, stimulate the circulation in surgical shock and other forms of circulatory failure

Contraindications

Nephritis, arteriosclerosis and in obstetrics when there is any abnormal physical impediment to delivery

FOR OBSTETRICAL USE

Description

Pituitary Posterior Solution is an extract of the water-soluble portion of the hypophysis, posterior lobe, physiologically standardized to agree with U S P XI with chlorbutanol (chloroform derivative) 0.25%

Supplied

In Ampules

- $\frac{1}{2}$ cc size ampules, box of 12
- $\frac{1}{2}$ cc size ampules, box of 25
- $\frac{1}{2}$ cc size ampules, box of 100
- 1 cc size ampules, box of 12
- 1 cc size ampules, box of 25
- 1 cc size ampules, box of 100

Code Word

- DITCH
- TAPESTRY
- ELUDE
- DOMAIN
- TARDILY
- EMANATE

In Vials	Code Word
10 cc size rubber capped vials, each	DISGUISE
10 cc size rubber capped vials, box of 6	DISHONOR
10 cc size rubber capped vials, box of 25	TENSION

Dose

One-tifth to two cc It is preferable to begin with a small amount and repeat as needed

For Surgical Use

PITUITARY Posterior Solution for surgical use is double the strength of PITUITARY Posterior Solution U S P, for obstetrical use

Physiological Action

Given intramuscularly causes a prolonged rise in blood pressure, slowing and strengthening of the heart beat, increased peristalsis and contraction of the uterus, with marked increase in secretion of urine

Pituitary posterior, surgical strength, was confirmed by Guthrie and Barger¹ as a powerful stimulant of intestinal peristalsis It acts within five minutes and endures for 45 to 90 minutes with gradually diminished effect Its action is consistent, with apparent equal strength on the colon and the ileum Increased motility of the intestine results without any evident effect on the tonus

Supplied

1 cc size ampules, box of 12	DORMANT
1 cc size ampules, box of 25	TARGET
1 cc size ampules, box of 100	EMBLEM

Dose

One-half to one cc immediately after or within four hours after operation

Note

Tests for potency after the lapse of time show the solution to remain fully up to the official standard for at least two years after the date of preparation The expiration date appears upon the ampule

¹ Guthrie, John S and Barger, J A, Surg Gyn & Obs 63 743, 1936

PITUITARY-THYMUS SOLUTION*Suggested*

For its oxytocic action in labor cases

Temesvary claimed the addition of thymus gland corrected the tonic spasms of contraction produced by pituitary posterior solution, to rhythmic contractions more like natural uterine labor pains, that it was safe to use the combination in the first stage and that

thymus tended to overcome muscular fatigue There has been clinical support of these contentions Laboratory experiments however, do not show any action on the isolated uterus by thymus when alone or changed action of pituitary posterior solution when thymus is added

Pituitary-Thymus solution is supplied in ampules for the convenience of physicians who consider that it has advantages over small doses of pituitary posterior solution (obstetrical) alone

Description

$\frac{1}{2}$ cc is equivalent to 0.175 cc pituitary posterior solution U S P, and contains extractives of 0.5 gm fresh thymus tissue, with chlorbutanol (chloroform derivative) 0.25%

Supplied

Code Word

$\frac{1}{2}$ cc size ampule, box of 12	DOTAGE
$\frac{1}{2}$ cc size ampule, box of 25	TAPERING
$\frac{1}{2}$ cc size ampule, box of 100	ELDEST

Dose

$\frac{1}{2}$ cc given after labor has definitely begun Should not be used if there is any physical impediment to delivery

PITUITARY WHOLE SOLUTION

Suggested in

Obesity of pituitary origin

Description

One cc contains the soluble extractives of 15 $\frac{1}{2}$ grs fresh pituitary gland including the anterior, posterior, and intermediate parts, with chlorbutanol (chloroform derivative) 0.25%

Supplied

Code Word

1 cc size ampules, box of 12	DURANCE
1 cc size ampules, box of 25	TINKERED
1 cc size ampules, box of 100	EXCITE

Dose

From $\frac{1}{2}$ to 2 cc injected intramuscularly three times a week

PROSTATE-ORCHIC SOLUTION

Description

Each cc contains the extractives of 15 grs prostate and 27 $\frac{1}{2}$ grains orchic fresh glands

Supplied

Code Word

1 cc size ampules, box of 12	DRAMA
1 cc size ampules, box of 25	TIDINGS
1 cc size ampules, box of 100	ESTATE

Dose

Initially one cc injected intramuscularly every second day with the intervals gradually lengthened

SPLENEX*Suggested*

Among skin conditions spleen extract has been recommended for eczema, urticaria, angioneurotic edema, dermatitis herpetiformis, and secondary toxic exfoliative dermatitis

Improvement has been reported from its use in bone and joint tuberculosis, osteomyelitis, and ununited fractures Spleen has also been extensively experimented with in hypochromic anemia

Description

2 cc ampules Each cc contains the extractives of 5 grams of deproteinized spleen substance, with chlorbutanol (chloroform derivative) 0.25% This strength, known as "500%," should be distinguished from solutions that, on the same basis, contain 40% and 150% extract

Physiological Actions

It has been said that the spleen is an inexplicable organ To a certain extent such is still true, notwithstanding that it has long been recognized as the organ chiefly concerned with the removal of old red cells from the circulation Beyond this the apparent functions of spleen are so diverse that many speculations have concerned them

Modern investigation places it as one of the system of endocrine glands, its most important duty being to regulate the composition and circulation of the blood It apparently has an inhibitory influence upon the bone marrow (see Banti's disease) and with the marrow a distinct part in increasing and decreasing the number of red cells H Zondek¹ avers that the production of white cells through the marrow is likewise regulated by the same organ. The liver and the thyroid enter into the picture, and possibly the ovaries and the thymus Their action is antagonistic to the spleen and stimulating upon the bone marrow Then, above all if these glands operates the sympathetic nervous system in regulating their functional equilibrium and ending in maintaining a constant proportion of the blood cells

The spleen is one of the chief depots for blood, as shown by Barcroft² It regulates the quantity of blood in circulation by the



THE SYNTHESIS OF COMPLEX ORGANIC COMPOUNDS The apparatus illustrated is used for reactions which must be carried out in an atmosphere of nitrogen, under completely anhydrous conditions

action of the muscle fibres of its capsule which allow the spleen to retain the blood in its interstices or to throw it into the circulation. This sluice-gate action is governed by the hormones from the adrenal medulla and the thyroid.

An antagonism between spleen and thyroid is presumed from reduction in the basal metabolism reported after giving of spleen. It increases water storage in the tissues by inhibiting diuresis and causes a rise in the blood cholesterol. Finally, German workers have shown that injection of spleen extract is followed by a distinct increase in the phagocytic power of leucocytes with a corresponding increase in the defensive activity of the reticulo-endothelial system. All of this goes to explain the surprise that has suffused some clinicians who have been greeted with benefit beyond their expectations from the effects of spleen injections in skin diseases. It does not touch the reason for certain results in bone formation, mentioned below.

Supplied

2 cc size ampules, box of 12
2 cc size ampules, box of 25
2 cc size ampules, box of 100

Code Word

DISBURSE
THANKED
ENJOIN

Dose

2 cc are given intramuscularly preferably daily, although if convenience demands, injections may be made every second day.

Therapeutic Notes

SKIN CONDITIONS

Apparently the greatest success from the administration of spleen extract has been in treatment of weeping eczema in the acute state. The effect is often rapid and frequently complete. The itching usually is controlled, even though the basis of the disease is not. Urticaria has likewise been treated successfully, seemingly that of digestive origin being the chief indication.

Of secondary importance in number are cases of seborrheic dermatitis, infectious eczematoid dermatitis, in which the favorable response was shown by cessation of itching when present, disappearance of the traumatic dermatitis, and marked general improvement.

In a glowing account of the effect of spleen in eczema and urticaria, Paul³ added that it causes hives to disappear in as short a time as 15 minutes and the itching within an hour.

ANEMIA

Most extensive work was done by Leake⁴ and his co-workers on the use of spleen in anemia. His theory of the organ's action is that it produces in proportion to the number of red cells removed from the blood, and possibly from them, a hormone capable of stimulating erythrocyte production. The hormone from the spleen lodges in the red bone marrow and under the influence of this combination the adult red cell production system is regulated. A gradual but distinct rise in the number of circulating erythrocytes occurs with a less marked increase in the hemoglobin content. In most of Leake's work spleen was fed in conjunction with bone marrow.

BONE CONDITIONS

Wheeldon⁵ adds to the effects from feeding of spleen a probable increased calcium retention in the callus of fractures. After clinical, roentgenological, laboratory, and histological evidence following the taking of spleen by mouth, he was convinced that the material induces calcium deposition and may stimulate the formation of new bone. In bone and joint tuberculosis, improvement was brought in a reduction in the fever, the deformity, complications, local reactions, growth, weight, color, appetite, and blood composition.

1 Zondek, H., *The Diseases of the Endocrine Glands*, page 86

2 Barcroft, J. *Physiol.*, 60 79, 1925

3 Paul, Thos. M., *Urol. & Cut. Rev.* 33 207, 1934

4 Leake, C. D., *Section on Pathology and Physiology, A. M. A., Tr.* 1925, p. 67

5 Wheeldon, Thomas, *Surg., Gynec., & Obstet.* 63 761, 1936

THYROID*Suggested in*

Thyroid deficiencies including myxedema of the infantile (cretinism) or adult types, simple goiter (endemic or sporadic), and obesity. The uses in milder forms of thyroid insufficiencies may be inferred from its physiological action and its interrelationship with other glands.

Contraindications

There is danger in giving thyroid, because of its iodine content, in cases of adenomatous goiter (toxic adenoma). Also, as sometimes given, to cause a temporary remission in exophthalmic goiter, it may adversely increase the metabolic rate.

Physiological Action

At least some of the functions of the thyroid have been known

for a longer period than any of the other glands of internal secretion and the most dramatic successes of organotherapy have been displayed in overcoming diseases of thyroid deficiency. The gland regulates body metabolism and exercises some control on the heart rate, fat consumption, excretion of fluid, gastrointestinal motility, and mental alertness. One of its most important functions is to sensitize certain tissues of sympathetic nervous stimulation.

The purified secretion of the gland, thyroxin, is available, yet the best therapeutic work is not done with this principle, but with the cruder extract. It is possible that the gland produces a necessary principle other than thyroxin.

Symptoms of thyroid deficiency are a basal metabolic rate of minus 15 or lower, a blood cholesterol determination of more than 250 mg per 100 cc, low blood pressure, slowed heart rate, low blood iodine content, generalized obesity, especially fat pads on the backs of the hands, sluggish mentality, a desire to sleep and an expressionless face with characteristic bags under the eyes.

Supplied

Ampuled Sterile Solution

The solution is standardized to contain 0.005 mgm of thyroid-iodine in each cc, equivalent to 0.033 grams of thyroid USP. With chlorbutanol (chloroform derivative) 0.25%.

The thyroid content of the solution in ampules is small and is, therefore, adapted best to emergency use. Thyroid is the one gland universally agreed upon as being effective by mouth.

Code Word

1 cc size ampules, box of 12	DICTATOR
1 cc size ampules, box of 25	TANTRUM
1 cc size ampules, box of 100	ELONGATE

Tablets

Thyroid gland USP, desiccated substance contains not less than 0.17 and not more than 0.23 per cent thyroid iodine. Tablets are furnished in bottles of 100, 500, and 1000 in the following strengths:

- ¼ grain—No 211-A
- ½ grain—No 211-B
- 1 grain—No 211-C
- 2 grains—No 211-D

Dose

The requisite dose is the amount required to increase the meta-



TO INSURE THE STERILITY of solutions for parenteral injection, the Breon bacteriological laboratory subjects samples of each completed lot to the "sterility test" After a seven to ten day incubation period the beef broth media must contain no bacterial growth

bolism to normal and to reduce the cholesterol to 200 mg or less per 100 cc of blood

By mouth the amount of substance given varies with the needs and susceptibility of the individual. Some will tolerate but $\frac{1}{4}$ grain daily which may be increased gradually. In the majority it is possible to give an initial daily dose of 1 grain, gradually increased until the desired effect or until adverse symptoms are shown. There is a cumulative effect from thyroid which reaches its peak in about eight days, which need be kept in mind in prescribing. The dose of the sterile solution is 1 cc intramuscularly daily.

Symptoms of intolerance or toxicity are first shown by increased pulse rate, "nervousness" and emotional instability. Later symptoms of overdosage are intestinal discomfort, "running nose," headaches, and an anxiety state. Upon observing any of these manifestations, thyroid may be recessed and the treatment later resumed with a lower dose. Even where there is no indication of approaching intolerance, it is often desirable to interrupt thyroid medication for one week out of four. When thyroid is prescribed in its higher doses, the patient should be seen frequently and any toxic symptoms carefully watched for.

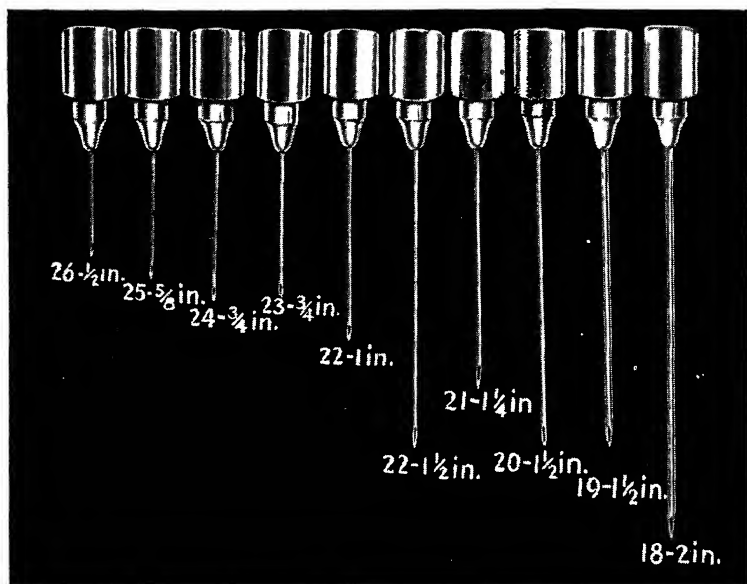
Therapeutic Notes

Because of the nearly universal need of thyroid in conjunction with endocrine hypofunctions, it is impractical to attempt to describe its use in the milder thyroid deficiencies. A few of these may, however, briefly be mentioned. Menstrual irregularity, exhibited both by a deficiency and a too profuse flow may be benefited by thyroid, which is usually given in conjunction with other endocrines. Menopause disturbances may be mitigated by it, particularly if one of the objective symptoms is obesity. Certain skin diseases, including senile atrophy, scleroderma, and psoriasis, may be indications for thyroid administration.

OBESITY (ENDOGENOUS)

This is probably the most prevalent of the milder conditions in which thyroid is resorted to and for which speeding up of metabolism with the excretion of water from the tissues is the prime effect desired. There is objection by some to the use of thyroid for this purpose, but, as said by Clendening, "I have seen no harm come from its use in doses of one to two grains a day."

STAINLESS STEEL HYPODERMIC AND INTRAVENOUS NEEDLES



Length,
Gauge Inches

27	1/2	
26	1/2	
25	3/8	
25	3/4	
24	3/4	Intravenous points
23	3/8	
23	3/4	Intravenous points
23	1	

Length,
Gauge Inches

22	1	Intravenous points
22	1 1/2	Intravenous points
22	2	
21	1 1/4	
20	1	Intravenous points
20	1 1/2	Intravenous points
19	1 1/2	
18	2	

Stainless Steel non-rusting needles have displaced needles both higher in price and those of lower initial cost. They are not affected by air or moisture, or chemicals that attack ordinary steel, sterilizable by all usable methods excepting flaming.

The gauge of a needle indicates the outside diameter of the cannula, gauge 24, for example, is 1/24 of an inch in diameter. Packed in boxes of 12.

ALL GLASS SYRINGES

White Resistance Glass Syringes

These luer type syringes are of resistant glass which is annealed four times in a temperature of 1,200 degrees to eliminate any strain or weak spots. This insures the highest resistance to breakage caused by quick changes from cold to hot temperatures during sterilization.

Each syringe is tested for good compression, the graduations are baked in and the barrel and plunger bear identical numbers to aid reassembling should several syringes be sterilized at the same time. They are made wholly in the United States and meet Government specifications for quality.

All sizes are furnished in center tips. Sizes 5 cc, 10 cc, 20 cc, and 30 cc are supplied also in eccentric tips.

Sizes

1½ cc	20 cc
2 cc	30 cc
5 cc	50 cc
10 cc	

Vim Emerald Syringes

Vim Syringes are distinguished by velvet smoothness of action, and heaviness and beauty of the emerald color glass. They have white enamel graduations.

All sizes are furnished in center tips. Sizes 5 cc, 10 cc, 20 cc, 30 cc and 50 cc are supplied also in eccentric tips.

Sizes

1½ cc	20 cc
2 cc	30 cc
5 cc	50 cc
10 cc	



IMMERSION IN A VACUUM BATH DETECTS ANY CRACKED AMPULES

OINTMENTS

ADESTAN

Indications

For the treatment of burns

Advantages

For several years clinical evidence has been accumulating of the effectiveness of cod liver oil in the treatment of wounds, acute osteomyelitis, and burns following the experimental phase, carried on first by Lohr¹ of Germany. The healing is due to the vitamin A and D content of the oil. This knowledge has led to the production and use of a concentrate of these vitamins.

The treatment is particularly striking in burns. It has not been necessary to seed the burned surface with transplanted skin, although in some cases the epithelium over several square feet of surface has been destroyed.

Tannic acid is incorporated in Adestan as a water solution—not in powder form. It consequently more effectively permeates the burned surface to precipitate the devitalized tissue and seal in the capillaries, to prevent escape of body fluids and to conserve body heat. The tanned eschar serves to protect nerve ends, to protect the new epithelium of second degree burns and the smooth granulating surface of burns of third degree. It is no more effective in preventing the early fatalities of burns than older methods. Late fatalities, however, due to secondary infection, have been markedly reduced.

Description

Adestan is an oxycholesterinated ointment in which are incorporated 3140 units vitamin D per ounce of ointment and which is rich in vitamin A. It is equivalent to the vitamin A and D content of about ten teaspoonfuls of cod liver oil. With this is included tannic acid 20%.

Supplied

In pure tin collapsible tubes only, of two sizes, one ounce and one-fourth pound and in the following quantities

	<i>Code Word</i>
$\frac{1}{2}$ doz 1-oz	MECHANIC
1 doz 1-oz	MFDDLER
1 $\frac{1}{4}$ -lb	NULLIFY
4 $\frac{1}{4}$ -lb	NOTARY
$\frac{1}{2}$ doz $\frac{1}{4}$ -lb	MERRILY
1 doz $\frac{1}{4}$ -lb	METALLIC

Therapeutic Notes

The present position of tannic acid in the treatment of burns originated with Davidson who showed that a burn causes a sharp reduction in blood chlorides, that the local destruction of tissues gives rise to the subsequent formation of a proteose, and that the latter is the toxic element in burns. The absorption of this toxic proteose is responsible for the dreaded constitutional reaction. These facts pointed to the logical manner of preventing the toxemia—prevent the absorption of the protein derivatives from the site of the burn. Tannic acid precipitates proteins and forms a more or less stable compound with the protein constituents of the body fluids and cells. It thus dams the loss of body fluid from the burned area. The precipitated proteins on the tannic-treated surface mechanically minimize the absorption of the products of protein degeneration and this intervention, in addition, protects against sensory and inflammatory irritation. In short, tannic acid precipitates the toxic elements in the burned tissues, thereby preventing their absorption.

The role that vitamins A and D and the oxysterolesterinated material play may be referred to in the succeeding pages in connection with Adestrin.

1 Lohr, W., *Zentralb. f. Chir.* 61:1686, 1934

ADESTRIN OINTMENT

Indications

Wounds, especially when large areas of epithelium are involved, in postoperative incisions and amputation stumps. Also bone cavities as in osteomyelitis.

Advantages

Adestrin stimulates healing by a new means—the strikingly effective, though but partly understood action of vitamins on the tissues.

It is pain-relieving, sterile, neutral and non-irritating. Treatment of wounds with it is easily managed, partly because dressings are infrequently changed.

Streptococci, staphylococci and *B. coli*, the bacteria ordinarily occupying infected wounds were found by Lohr incapable of multiplying in cod liver oil. He reported he did not have to resort to skin grafts after he began the use of the oil. It permeates the tissues and, due to its vitamin content, causes a rapid liquefaction of the necrotic areas, followed by a powerful stimulation of granulation affecting all tissues, including the epithelium.

Cod liver oil itself is too free-moving to be controlled. For restraint in a wound or on a tissue surface it must be applied in some adherent form. The older ointment bases in themselves are not readily absorbed. Furthermore, the work of Lauber and Rocholl¹ on rabbits disclosed that the ointment bases with one exception nullified vitamin action. Vitamin A added to a cholesterol-containing ointment accelerated healing by approximately 50%. Adestrin, through the inclusion of oxycholesterol, one of the important normal constituents of the skin, the blood, and some of the glands, has solved these problems.

Description

Adestrin is an oxycholesterinated ointment in which are incorporated 3140 units vitamin D per ounce of ointment and which is rich in vitamin A. It is equivalent to the vitamin A and D content of about ten teaspoonfuls of cod liver oil.

Supplied

In pure tin collapsible tubes only of two sizes: one ounce and one-fourth pound. These are furnished in the following quantities:

	<i>Code Word</i>
½ doz 1-oz	MEDITATE
1 doz 1-oz	MEETING
1 ¼-lb	NUTMEG
4 ¼-lb	NOURISH
½ doz ¼-lb	MEMBER
1 doz ¼-lb	MEMENTO

Therapeutic Notes

It has been shown through controlled studies of vitaminized ointments that apparently vitamin A tends to prevent cornification or keratinization of epithelium and is responsible for the rapid healing

It is known that vitamin A guards the epithelium. The theory has been recently set up and has received some confirmation that whereas in these ointments vitamin A stimulates epithelial growth, it is vitamin D that stimulates glandular tissue.

The base of Adestrin abounds in the cholesterol and oxycholesterin fractions of lanolin and yet is free from the stickiness and the odor that prevent the use of pure lanolin. That the sterol portion of the lanolin exerts the conditioning effect on the epithelium is evident from the fact that the sebaceous matter protecting the surface of the skin is about 19% cholesterol.

APPLICATION IN OSTEOMYELITIS

Acute osteomyelitis is treated by making an incision down to the periosteum with drilling of the bone. The entire wound is then filled with oxycholesterinated vitamin ointment. It is considered unnecessary to insert a drain, but a plaster cast is applied for about two weeks. When the cast is removed, isolated pieces of dead bone, often found after the older treatment, are usually absent.

1. Lauber, J. H. and Rocholl, H., Klin. Wchnschr. 14: 1143, 1935.

BENOXAL OINTMENT

Indications

Dermatophytosis or "eczematoid ringworm," commonly known as athlete's foot.

Contraindications

Should not be used on open wounds or ulcers.

Advantages

Salicylic acid is the drug favored quite generally in the treatment of athlete's foot. In Benoxal this is augmented with benzoic acid and is carried in an ointment base designed to permit penetration and at the same time of such consistency as to enhance the keratolytic action by remaining in contact with the affected area.

Description

Benoxal contains

Benzoic Acid	12%
Salicylic Acid	5%
Zinc Oxide	15%

Physiological Action

Its benefit in dermatophytosis is due first to its softening effect upon the corneous layer of the skin and mechanical effect through exfoliation, then to its antagonistic action upon the imbedded parasites

Supplied

One-ounce jars are provided with dispensing labels, and each is packed in an individual carton

Code Word

½ doz ounce jars	MASTER
1 doz ounce jars	NEEDFUL
1 lb glass jar	NOSEGAY
5 lb glass jar	NOTABLY

Therapeutic Notes

In late years a large part of the population has been harassed with an irritation generally confined to the spaces between the toes. Isolated cases however indicate that the same condition may occur or extend to every part of the body except the scalp.

The disease is due to fungi, most often identified as *Trichophyton interdigitale*, and has been described as a ringless ringworm. It is contracted from the floors of locker-rooms, swimming pools, gymnasiums and hotel rooms. The United States Public Health Service has said that probably half of all adults have had the condition at some time. In the majority the disease is mild though the itching may be intense. Yet individuals have been known to be wholly disabled for several months.

Dermatophytosis may be summarized as a superficial erythema in a locality subject to chafing, especially between the toes or on the feet, but also between the fingers, in the axilla, or the groin. The skin manifestations usually vesicular, may in some have the appearance of an acute eczema, either weeping or dry and scaly, or of chronic eczema with thickened and indurated epithelium.

While the condition for practical purposes may be considered a superficial infection, isolated cases are recorded in which the fungus elements have been found in the blood stream as well as from a lesion of the skin considered secondary, the organism has also been recovered from inguinal lymph nodes and from the toes of the same patient. Systemic treatment has no visible effect, with the possible exception of a diet to increase the acidity of the tissues.

Suggested method of application is included with each package of Benoval.

BENZOLIN OINTMENT

Indications

Burns, surface ulcers, minor wounds, and itching conditions, to allay discomfort and encourage healing

Advantages

Benzolin has popularized itself as an anodyne for mild sunburn at one extreme of the therapeutic scale, and for severe burns from industrial accidents, at the other. It is preferred when the greater stimulation of skin growth and the yellow stain caused by Picrolin Ointment is not desired.

Description

Benzolin contains

Benzocaine	2%
Hydrogenated oil, lanolin and petrolatum	q s

Supplied

½ doz 1-oz collapsible tubes	<i>Code Word</i> MASTIFF
1 doz 1-oz collapsible tubes	MARSHALL
1 lb glass jar	NEGATIVE
5 lb glass jar	NICKEL

BOR-OXYQUIN VAGINAL JELLY

In intra-vaginal prophylaxis, many consider a glycerin, water-soluble vehicle to have very pronounced superiorities over, for instance, suppositories. The non-greasy base of Bor-Oxyquin Jelly will mix with the watery secretions, and diffusion should follow throughout the vaginal vault. As observed by Sisskind,¹ tablets and powders contain antiseptics in a concentrated and undissolved form and may explain the sense of irritation felt from them. Jellies contain the drugs dissolved and mitigated by demulcents. They are capable of carrying stronger antiseptics without irritation.

To oxyquinolin sulfate is attributed a high power of restraining development. A strength of 1:10,000 is sufficient to prevent development of staphylococcus pyogenes or the Bacillus typhosus, while 1:20,000 inhibits their activity to a marked degree. Yet Bor-Oxyquin Vaginal Jelly does not injure mucous membranes. Very rarely individual hypersensitiveness is shown.

Description

Bor-Oxyquin Vaginal Jelly consists of oxyquinolin sulfate 1 300 and boric acid in a glycerinated tragacanth base It is contained in collapsible tubes of two ounces each which are preferably fitted with applicator pipes

The applicators are of transparent, resilient composition and are non-breakable in ordinary handling They avoid chance for injury to membranes from breakage or sharp edges possible with glass applicators Each is accompanied by a hood to fit over the tip and a metal button to screw into the base After use the outside of the applicator is washed, the hood and metal button attached and the jelly remaining in the applicator is preserved for later use

IN LEUKORRHEA DUE TO SIMPLE VAGINITIS

Simple, irritative, nongonorrheal vaginitis is in general successfully treated with Boroxyquin Vaginal Jelly

Preliminary to the first treatment the vaginal tract is cleansed with a liquid soap such as Mercuroseptic, diluted, and the area dried About $\frac{1}{8}$ ounce of Boroxyquin Jelly is inserted and brought in contact with the entire vaginal mucosa Reapplications of the jelly are made two or three times a week In the average case three to five applications may relieve the condition to the patient's satisfaction, although more are desirable

*Supplied**Code Word*

- $\frac{1}{2}$ doz tubes, each with applicator
- 1 doz tubes, each with applicator
- $\frac{1}{2}$ doz tubes, without applicators
- 1 doz tubes, without applicators

MARKET
MAGNOLIA
MASTODON
MANSION

1 Sisskind, S G, Med Rec 139 191, 1934

LUBRICATING JELLY

A sterile glycerinated lubricant with tragacanth base to facilitate the insertion of instruments, such as the catheter, colon tube, sound and speculum and in digital examinations Its consistency is such that it varies little in cold or warm temperatures

Lubricating Jelly-Breon is exceedingly smooth and is free from dark specks As it is non-greasy and water soluble, it is easily removed It does not soil clothing nor injure metal or rubber instru-

ments It is not irritating to sensitive membranes, but on the contrary is emollient

Supplied

1-lb glass jar

5-lb glass jar

Code Word

NANKEEN

NOBLY

PICROLIN OINTMENT

Indications

Burns of first and second degree and superficial wounds

Advantages

Picrolin has analgesic, antiseptic, and coagulant properties It combines the anesthetic action of benzocaine with picric acid Through the lanolin content it also assists healing

Description

Picrolin contains

Picric Acid

0.25%

Benzocaine Benzoate

1.00%

Lanolin and Petrolatum

q. s.

Supplied

½ doz 1-oz collapsible tubes

1 doz 1-oz collapsible tubes

1 lb glass jar

5 lb glass jar

Code Word

MATRONLY

MAGNET

NARROW

NATURE

Therapeutic Notes

Unless effects peculiar to picric acid are desired, it is believed that Adestan Ointment described on a previous page is better in burns

The analgesic properties of Picrolin tend to afford relief from painful open lesions, while the necessary prophylaxis is provided at the same time It also stimulates epithelial growth Picrolin carries the yellow stain characteristic of picric acid, which under some circumstances is objectionable

Picrolin, being slowly absorbed, is safe and satisfactory as a local analgesic It is practically non-toxic and is effective also through unbroken mucous membrane There is an astringent and inhibitory action that is of use in treating ulcers with a free discharge It is applied freely to the affected part and covered with a loose dressing



THE HIGH SPEED CENTRIFUGE has become one of the most versatile pieces of equipment in the chemical laboratory. The photograph shows the filtering basket in operation.

SALIBENZ OINTMENT

Indications

In boils and certain skin inflammations, especially those in which the horny layer or the hair is affected

Advantages

Salibenz Ointment is of benefit in skin conditions where it is desired to soften the epithelium and to promote the removal of crusts and morbid tissue. It has a distinct analgesic action in painful conditions of the skin and the base is prepared to enhance absorption.

Description

Salibenz contains

Salicylic Acid	12½ %
Benzocaine	1 %
Lanolin	q s

Supplied

Code Word

½ doz 1-oz collapsible tubes	MATTRESS
1 doz 1-oz collapsible tubes	MAGPIE
1 lb glass jar	NEBULA
5 lb glass jar	NIMBLE

SOLINIMENT (ANALGESIC BALM)

A methyl salicylate balm used for its analgesic effect through counter-irritation in a wide variety of minor congestive conditions

Advantages

In Soliniment the analgesic properties of the popular menthol are combined with methyl-salicylate and other stimulants and rubefacients, giving a mild local salicylate therapy.

An exhaustive study of the comparative absorption by the human skin of methyl salicylate from different oils was made by Brown.¹ It was shown that, contrasted with methyl salicylate alone, absorption was increased 35% with olive oil, 65% with liquid petrolatum, and 118% with lanolin.

Description

Soluniment is composed of

Methylsalicylate, menthol, eucalyptol, and camphor in a special oxvcholesterinated ointment base composed chiefly of lanolin

*Supplied**Code Word*

½ doz 1-oz collapsible tubes	MAXIM
1 doz 1-oz collapsible tubes	MANTLE
1 lb glass jar	NOBODY
5 lb glass jar	NITRATE

1 Brown, E W, J Phar & Exper Ther 50 32, 1934

SULFIC JELLY*Indications*

Scabies and similar conditions requiring the application of sulfur

Advantages

A sulfur application with distinct characteristics A water soluble base enables the active medicinals to come quickly in contact with the affected area No evil odor emanates from it It contains additionally ichthammol (sulphonated bitumen)

Formula

Sulfur, ppt USP	10%
Ichthammol	5%
Boric Acid	2.5%
Phenol	0.3%

In a sterile, glycerinated, water soluble jelly base

*Supplied**Code Word*

½ doz 2-oz collapsible tubes	MEADOW
1 doz 2-oz collapsible tubes	NEIGHBOR
1 lb glass jar	NERVOUS

How Applied

In scabies

At night after a bath with hot water and soap, during which burrows are scrubbed open with a brush, the patient applies sulfur to the entire body except the face and scalp In some cases it may be necessary without bathing again, to apply the jelly in the morning and the second night A cleansing bath is taken the second morning without applying ointment A soothing talcum powder is dusted over the body with a complete change of clothing All used clothing and bedding are either boiled or dry cleaned

Therapeutic Notes

On application of Sulfic to the skin, it is believed that hydrogen sulfide is slowly formed and that the activity is due to this reaction. It stimulates peripheral circulation and leads to incomplete keratinization without injury to lower layers. Through its stimulation of the peripheral circulation it tends to overcome congestion and to soften the scaly elements. For one or both of these reasons it is used in seborrhea and acne.

TANUROL OINTMENT*Indications*

To abate discomfort and ameliorate the severity of hemorrhoids and pruritis.

Advantages

An analgesic and astringent unguent that has proved peculiarly grateful to those afflicted with vascular tumors of the rectal mucous membrane, both within and without the sphincter. One application is enough to diminish pain for a day and sometimes for several days. It tends also to prevent the dormant inflammation present in internal hemorrhoids from becoming an acute or subacute infection. Venous external hemorrhoids can sometimes be reduced and the pain always palliated by applications of Tanurol. Its astringency is suited to its purpose, while irritation and toxicity are practically absent. Its anesthetic action is largely on the nerve endings, with little effect upon the nerve trunks as with cocaine. This is the reason for its special applicability in pruritis.

Each tube is accompanied by a rubber cap to protect the ointment remaining in the applicator between applications.

Formula

Tannic acid	3%
Quinine and Urea Hydrochloride	¼%
Benzocaine	1%
Phenol	¾%
Lanolin and petrolatum	q s

Supplied

½ doz 1-oz tubes
1 doz 1-oz tubes
1 lb glass jar
5 lb glass jar

Code Word

MEASURE
MACHINE
NABOB
NIGHTCAP

UREAJEL

Indications

Chronic, suppurative conditions, including wounds, chronic ulcers, burns, gangrene, skin grafts, osteomyelitis, and where granulation of tissue is desired

Advantages

Ureajel produces cleansing of the wounds with disintegration of necrotic tissue and consequent lessening of foul odor, reduction of pyogenic infection, and rapid development of granulation tissue. Its healing power is attributed to stimulation of growth of granulation tissue and the production of abundant blood supply in these areas.

The jelly base will keep the urea in contact with the tissues longer than a solution and is especially useful in those cases in which gauze dressings would cause discomfort. A jelly is easy to apply. Ureajel is bland, stable, and non-toxic.

Staphylococci seem to be more resistant to urea solution than other bacteria tested, which included *Bacilli coli*, *Bacilli typhosi*, and *Bacilli mucosi*. Some strains of staphylococci showed inhibition of growth, but not death. An 8% solution prevents the growth of *Bacilli coli*. Thus, while Ureajel, containing 10% urea is not bactericidal, it is bacteriostatic to at least the common invaders.

Description

Ureajel is purified urea 10% in a water-soluble, tragacanthboroglycerin jelly base. Urea may be obtained from allantoin by hydrolysis, allantoin is one of the constituents excreted by maggots and maggots long have been known to hasten and improve the healing of wounds.

Supplied

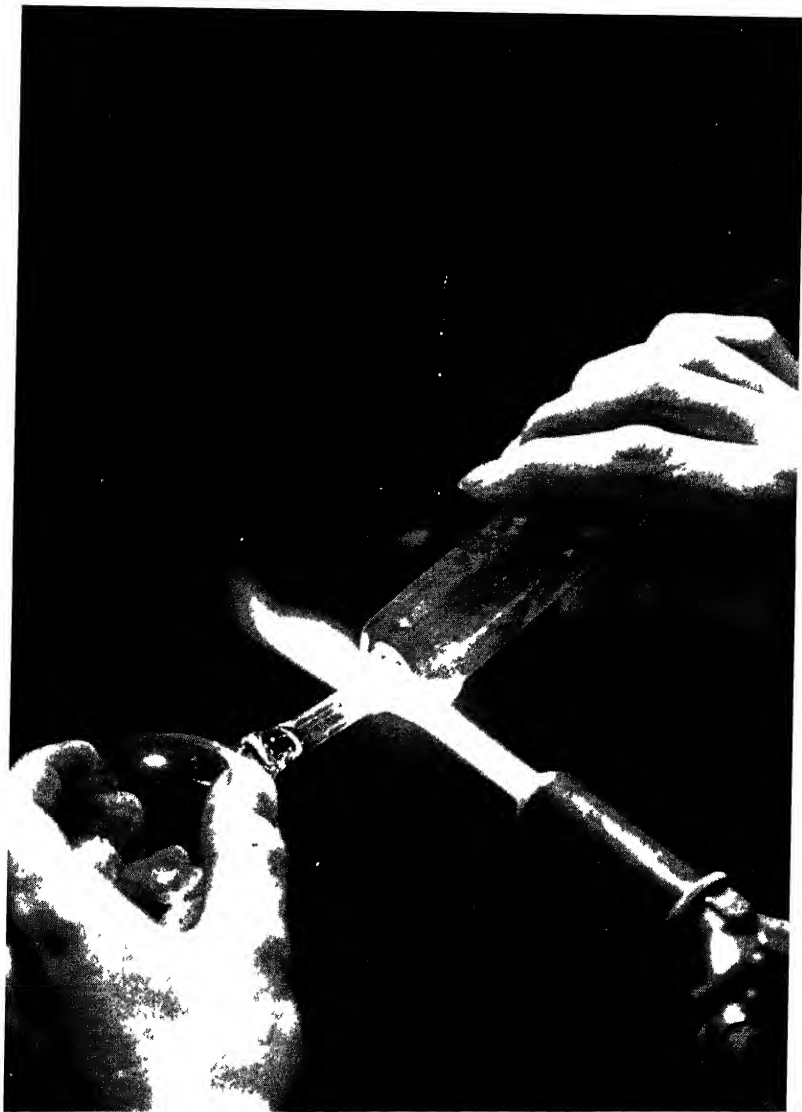
- $\frac{1}{2}$ doz 1-oz collapsible tubes
- 1 doz 1-oz collapsible tubes
- 1 lb glass jars
- 5 lb glass jars

Code Word

METHODIST
MIDLAND
NAMESAKE
NAVIGATE

Method of Application

Urea applications stimulate local rather than generalized granulation. Consequently, the extent of new growth can be controlled. Where it is desired to promote healing from the interior of the wound to the exterior and to restrict lateral growth, the base of the wound may be packed with Ureajel and the sides lightly covered with petrolatum. Where general granulation is desired, the jelly may be poured into the wound.



THE GLASS BLOWER plays a part in the operation of the Breon laboratories. He fabricates apparatus of special design and repairs broken glass equipment.

SPECIAL PHARMACEUTICALS

ACET-ALAC-QUIN

Indications

An adjunct in the overcoming of acute coryza

Advantages

Acet-alac-quin caplets and tablets prove popular with patients as they are pleasant to take and their action is prompt. Ordinarily it is only necessary to continue their use for forty-eight to seventy-two hours.

Physiological Action

The action is antipyretic, sudorific and cathartic. The atropine content tends to check bronchial secretions and to stimulate both circulation and respiration. In addition to its antipyretic action, gelsemium is valuable as an analgesic and helps relieve the headache and pains sometimes attending coryza.

Formula

Acetanilid	2 grs
Quinine Sulfate	$\frac{1}{2}$ gr
Podophyllin	$\frac{1}{40}$ gr
Alon	$\frac{1}{16}$ gr
Aconite Root	$\frac{1}{20}$ gr
Atropine Sulfate	$\frac{1}{2000}$ gr
Po Ext Gelsemium	$\frac{1}{16}$ gr
Capsicum	$\frac{1}{4}$ gr

Supplied

In Red, Sugar-Coated Caplets

Bottle of 500
Bottle of 1000
5000 bulk

Code Word

VISAGE
UNEASY
WAFFLE

In Red, Sugar-Coated Tablets

Bottle of 500
Bottle of 1000
5000 bulk

Code Word

RABBIT
IMBED
KENNEL

Dose

One caplet or tablet every two hours for four doses, then one, four times a day.

AMOBAR

Hypnotic and Sedative

Indications

Insomnia due to pain, especially headache, neuralgia, neuritis, and in nervousness

Advantages

Amobar may often be used to advantage in place of opiates. The constituent barbital is almost a pure hypnotic, exerting a sedative action on the cerebral cortex in doses too small to show other action. It is readily absorbed from the stomach. Large doses are not necessary.

If a patient is sleepless because of pain he may long continue to lose ground when a hypnotic alone is prescribed. When Amobar, which combines an effective analgesic with the hypnotic, is given, a notable change may ensue with sleep entering as the pain departs.

Formula

Aminopyrine	1¼ grs
Barbital-Soluble	2 grs

Physiological Action

Although possessing temperature-depressing properties in larger doses, aminopyrine is most useful in the relief of pain associated directly with the nerves. Doses as large as 7½ grs cause redness of the face and slight perspiration but usually not other symptoms.

Barbital exerts most of its action on the central nervous system, the chief effect being a sedation of the psychic cells of the brain. Sleep approximating the normal is induced by therapeutic doses and no after effects are usual. Its further activity is limited in importance to dilatation of the smaller blood vessels, such dilatation of the vessels of the kidney leading to a diuresis. Experimentally, the heart is little influenced. Full doses reduce the metabolic exchange. The lethal dose in animals is large, from eight to sixteen grains per kilo of weight being required to cause death in dogs, in rabbits, five to six grains per kilo.

Chronic toxemia is not uncommon after prolonged barbital medication. This may be shown by vertigo, disturbances in visual accommodation and in use of the legs and arms.

Supplied

Bottle of 500 compressed tablets
Bottle of 1000 compressed tablets
5000 bulk compressed tablets

Code Word

RADIANT
IMPROVE
KERCHIEF

Dose

One or two tablets When prescribed as a hypnotic, Amobar should be taken one or two hours before the effect is desired The frequency of repetition as required for pain will vary with the patient's condition Individuals with sensitive or unstable nervous systems are hypersensitive to hypnotics Those who are anemic require smaller doses and less frequent doses in diseases when elimination through the kidneys is retarded

Therapeutic Notes

Under the direction of Dr G P Grabfield at Peter Brent Brigham Hospital, Boston, an index of efficiency of various barbiturates was obtained by clinical test in 230 patients Grabfield concluded that barbital itself is the most efficient hypnotic of the barbituric acid derivatives Its efficiency index was 0.94, while that of one popular proprietary was 0.53

Agranulocytosis was evidenced in 1% of 400 patients who were given aminopyrine for long period by Rawls¹ There was a constant increase in red blood cells Rawls concluded that aminopyrine does not cause agranulocytosis except where there is a probable idiosyncrasy to the drug

If habituation is considered to be a condition which is a result of a demonstrable imbalance of certain nerve-nutrition functions, such as follow from lack of morphine in addicts, then barbital is not habit-forming Nevertheless, continued use of the barbiturates in certain individuals does result in a craving for their continuance and nervous symptoms appear when they are withdrawn Part of this desire is undoubtedly psychological only but whether due to the imagination or to the chemical it is an effect that should be guarded against by not prescribing barbiturates for an indefinite term unless lapses in administration occur

¹ Rawls, W B, Am J M Sc 192 175, 1937

BELLAMPHOR

Indications

Children's coughs due to colds

Description

The drugs composing Bellamphor have been adjusted in amount and combined to produce for the pediatric and general practitioner a wholesome agent for the relief of coughs in small children. An antipyretic, antispasmodic, stimulant and analgesic, it has proven more than satisfactory in use. A comparison of the drug content with the official dose of each shows the ample margin of safety.

Each fluid dram contains

		Official dose is
Fl Ext Belladonna	1/10 min	¼ min
Camphor	1/6 gr	3 grs
Spirit of Ethyl Nitrite	5 min	30 min
Aromatic Elixir, Vehicle,	q s	
Alcohol content	7%	

Supplied

½ doz 2-oz bottles with dispensing labels

1 doz 2-oz bottles

1 pint bottle

Code Word

LEAGUE

LAWFUL

GRAPHIC

Dose

For children two years and over, 1 to 1½ teaspoonfuls every four hours. For the newborn, one drop in one teaspoonful of water every three or four hours.

BENZOCAINE IN OIL

An analgesic in earache, toothache and as a urethral injection.

Dentists have found Benzocaine In Oil useful to desensitize gums when scaling in prophylaxis, in painful sockets after extractions, and preliminary to puncturing mucous surfaces with a needle.

Description

Benzocaine 2½% in vegetable oil with chlorbutanol (chloroform derivative) 0.5%

Supplied

The ½-oz size is in green bottles with dropper, each enclosed in a folding carton with an extra flap for dispensing.

Code Word

Half dozen ½-oz bottles

LEDGER

One dozen ½-oz bottles

LEEWAY

Pint bottle

GRATIS

BISMAGAL

An Antacid

Indications

If stomach discomfort is due to food irritation, distention, or pyloric spasm, Bismagal relieves, although it is recognized that it only temporarily changes the acid content. If ulcers or gastric inflammation are present even temporary neutralization of acids and relaxation of spasticity may be of therapeutic worth. Bismagal is properly prescribed for stomach hypersensitiveness, for the relief of nausea, heart burn, and spasm—which is synonymous with saying it is of value in all dyspepsias but it is of course more directly indicated in those associated with a high acid content.

Advantages

Bismagal Powder, a balanced alkalizing agent, acts with surprising rapidity in relieving gastric distress due to inflammation and flatulence. When taken, the powder is suspended in water and is evenly deposited over the lining of the stomach.

It is generally believed that combinations of certain antacids produce a better result than any single one.^{1,2} An example of their advantage is that the action of the quicker acting carbonates is continued by the more slowly effective bismuth and magnesia. The bismuth salts form a protective film over the irritated or inflamed area. Hyperacidity tends to be controlled by the calcium carbonate, the "ideal anti-acid," and in some measure by the magnesium carbonate. Most gases are absorbed by the moist magnesium oxide.

Formula

Bismuth Subcarbonate	10%
Calcium Carbonate, ppt	16%
Magnesium Carbonate	25%
Magnesium Oxide	10%
Special Soda Mint Base	q s

Supplied

½ doz 2-oz bottles
1 doz 2-oz bottles
One pound bottle

Code Word

OMEGA
OMISSION
OBSURE

Dose

One level teaspoonful of the powder in half glass of water one to two hours after meals

Therapeutic Notes

To reduce acid stomach secretions locally rather than by systemic alkalization is the prime purpose of Bismagal. It benefits cases of hyperacidity by neutralizing free acid present. There is a carminative effect due to the carbonates which liberate carbonic acid by interaction with the hydrochloric acid.

Bismagal contains no sodium bicarbonate. This, although a weak alkali, has been most popular because it is the only soluble antacid commonly used, is the physiological alkali of the body, and has other real advantages. But its use has been abused in the treatment of hyperacidity. The neutralization of acid which it brings is followed by a secondary rise in acid secretion and it may produce alkalosis if given in large amounts for long. In reporting 19 cases on the Sippy treatment, Block and Serby cited that on the complete Sippy powder combination or on sodium bicarbonate alone the urine quickly became alkaline, with calcium carbonate or magnesium oxide alone there was no alkalosis and the urine remained acid.

Magnesium oxide has nearly four and one-half times the acid neutralizing power of sodium bicarbonate. The period during which this neutralization occurs is also prolonged as compared with sodium bicarbonate. There is no production of gas, consequently no stomach distention. It has a laxative action which may be of value and it, like sodium bicarbonate, brings a secondary rise in acidity following the initial neutralization, both of which properties are held in abeyance in the moderate proportions in which the drug is used in Bismagal.

Calcium Carbonate has been termed the "ideal antacid" by Loevenhart and Crandall for the reasons (1) when suspended in water it is neutral in reaction, (2) although only a potential alkali, it neutralizes gastric acid, forming calcium chloride and carbon dioxide, (3) it may be given almost ad libitum. Any excess passes out in the feces, (4) it apparently has no effect on the acidity of the bowel except that if taken in excess it increases the bulk of the stool, (5) a superfluous will coat ulcerated areas and may in this way afford protection from irritating substances.

1 Crohn B. B., *Affections of the Stomach*, W. B. Saunders Co., 1927 p. 337

2 Friedenwald, Julius and Morrison, Samuel J. A. M. A. 108:879, 1937

BISMUDIN

Indications

A solution of bismuth used in fermentative and irritative conditions of the stomach and intestines

Formula

Soluble Bismuth (Breon)	20 grs
Equivalent to 9 grs elemental bismuth	
Sodium Phenolsulfonate	8 grs
Aromatic Vehicle	q s ad 1 fl oz

Advantages

A bismuth stomachic in a soluble form There is no need to shake the bottle to put the bismuth in solution The moment Bismudin reaches the stomach its bismuth content is precipitated and should be equally distributed as a soothing, insoluble film The weight and fineness of the precipitate is an aid in covering the irregular surface

Sodium phenolsulfonate is included at the request of some physicians

Supplied

Pint bottle
Gallon bottle

Code Word

GAI TOP
GLIMPSF

Dose

One tablespoonful three times a day, before meals

BOR-OXJEN

Bor-oxjen is a gentle but effective cleanser and deodorant In originating it the one thought was to produce the finest possible aid to the vaginal douche But, Bor-oxjen is so well liked that many are using it for general purposes, such as a mouth wash and for underarm perspiration

Composed of

Powder

Magnesium Peroxide
Sodium Chloride
Zinc Sulfate

Boric Acid
Magnesium Sulfate, exs
Essential Oils

Code Word

½ doz	4-oz	wide mouth	bottles	OPENLY
1 doz	4-oz	wide mouth	bottles	OBVIOUS
½ doz	10-oz	wide mouth	bottles	OPERA
1 doz	10-oz	wide mouth	bottles	OFFSET

Tablets

Similar chemical effects are achieved from the use of Bor-oxjen Tablets although for practical reasons in making tablets there are differences in the ingredients, which consist of

Sodium Perborate
Sodium Borate
Zinc Sulfate

Sodium Benzoate
Sodium Bicarbonate
Boric Acid, Aromatized

Code Word

1 doz	bottles, 25 tablets each, with tear off label	HAVOC
Bottle of	100	HANGING
Bottle of	500	RANCH
Bottle of	1,000	IMPOUND
5000	in bulk	KINDRED

Therapeutic Notes

Bor-oxjen tends to release oxygen upon coming in contact with water and organic matter. Upon contact with mucous secretions it favors the oxidation of the latter. Small quantities of essential oils and an astringent all well known to the physician are included to give cleansing qualities and the desired mild astringency.

Bor-oxjen douche powder and tablets are harmless and safe for repeated use.

As a Douche

Two tablets, or two teaspoonfuls of powder are dissolved in a quart of warm water.

BROXOLIN

A bacteriostatic and deodorizing agent especially adapted for application to mucous membranes of the vagina, it is more positively active than Bor-oxjen described above

Composed of

Oxyquinolin sulfate 2% with boric acid, sodium chloride, magnesium sulfate exsiccated and essential oils

Advantages

Broxolin as a feminine douche is distinctly effective in its cleansing, and deodorizing properties and tends to protect against infections. It is not intended for any other purpose. Despite its activity it is non-irritating to the mucous membranes as commonly used. Very rarely, a user is hypersensitive to the oxyquinolin content and in that case should use a preparation like Bor-oxjen instead.

Supplied

Code Word

½ dozen 6-oz wide mouth bottles

OCTAGON

One dozen 6-oz wide mouth bottles

ORACLE

5 pound wide mouth bottle

OBITUARY

Therapeutic Notes

There is no lack of unanimity concerning the ability of oxyquinolin sulfate to restrain development of bacteria and regarding its exceptional quality of penetrating tissues, although there is some difference of opinion regarding its power to kill bacteria.

It is stated it is an active inhibitant against bacteria in solutions of 1 1000 to 1 4000. One heaping teaspoonful of Broxolin in a quart of water gives a solution of 1 3000 oxyquinolin sulfate.

The general freedom from toxicity of oxyquinolin sulfate may be gauged from the fact that guinea pigs survive doses of 1.25 grams per kilo, equivalent to 85 grams for a man of average weight.

The inclusion of boric acid and sodium chloride increases the physiological properties of Broxolin. The magnesium sulfate favorably affects inflammation, if present, whether due to infection or local irritants. This action is apparently due to an exchange and diffusion of the solution and toxins through the membranes.

As a Douche

One teaspoonful is dissolved in a quart of warm water.

CALCIUM-SULFUR COMPOUND SOLUTION

Indications

A sulfur solution for application in skin affections when external sulfur therapy is indicated. Many conditions of obscure origin are relieved.

Advantage

A clean liquid medicament more agreeable to use than the application of ointments which soil the clothing with grease.

Supplied

In 4-oz. bottles with dispensing, tear-off label, also in larger bottles.

Half doz 4-oz. bottles
One doz 4-oz. bottles
Pint bottles
Quart bottle
Gallon bottle

Code Word

LASTLY
LABOR
GRAPPLE
GRAVITY
GREATLY

Physiological Action

Calcium-Sulfur Compound contains unstable sulfur compounds which release hydrogen sulfide and deposit a finely divided film of sulfur on the skin. This sulfur is slowly decomposed, continuing the medication over a period of time. It is believed to be more efficient than the same chemical in a grease base. McMurtry thinks hydrogen sulfide probably removes many bacteria present on the skin when applied repeatedly.

How Applied

The patient's skin should be well washed with soap and tepid water, dried thoroughly, and the solution applied with a soft sponge, or pledget of cotton over the affected area, or preferably over the entire body. The dried Calcium-Sulfur Compound may be left on the body overnight except on hypersensitive skins. It is removed by bathing, followed by a complete change of underclothing. One or two treatments are generally sufficient.

CEVITAMIC ACID

Crystalline Vitamin C

Indications

Scurvy, both acute and the various manifestations of the latent individuals in low state of health may show vitamin C deficiency in general, consequently it is yet an open question whether such lack results in specific pathologies when the scorbutus is of sub-clinical degree. There is evidence, however, of particular need of substantial amounts of the vitamin in Addison's disease, rheumatic conditions, in hemorrhagic diathesis (e.g. bleeding gums and purpura), and in dental caries.

Advantages

The tablets afford a concentrated supply of the vitamin when it is not readily available in the desired amount from the usual food sources.

Description

Each tablet contains 25 mgs of cevitic acid (crystalline vitamin C), the average amount of the vitamin found in 45 cc of fresh orange juice.

A synthetic, cevitic acid is chemically, physically and biologically identical with vitamin C from foods.

Physiological Action

The chief effect of the vitamin is regeneration of the intercellular cement substances in bone, teeth, and blood vessels. Decreased blood volume, some diuresis, a slight drop in body temperature, increased vascular tonus, and a vagotonic effect on the circulation are also seen following its administration.

Supplied

1 bottle of	40 tablets
3 bottles of	40 tablets
6 bottles of	40 tablets
12 bottles of	40 tablets

Code Words

HURRAH
HUSBAND
HUSKY
HYENA

Therapeutic Notes

All the disease evidences of vitamin C deficiency are understandable when the condition is basically seen as a lack of formation of

intercellular substances. One of these is collagen, the main organic constituent of connective tissue and of organic material of the bones—the material that is changed into glue or gelatin. Other such deficient substances are the matrices of bone, dentin and cartilage and cement substances, including that of the endothelium of the vessels, but excluding that which unites the cells of the epithelium.

The action of vitamin C is therefore on cells of mesenchymal origin. The hemorrhages that characterize its deficiency are a mechanical fault due to lack of collagen in fibrous tissue and in bones.

Dosage

The dosage of cevitamic acid varies widely. No injurious effects from overdosage have been shown. The average protective dose for infants is 10 mg daily, curative, 25 to 40 mg. The average protective dose for adults is 25 to 40 mg daily, curative 75 to 200 mg.

THE CHANCROL TREATMENT

Indications

Chancroids

Advantages

The medicaments have a selective and destructive action on the bacillus of Ducrey. After the second day, the chancroids begin to drop out, leaving a clean, granulating surface which heals with remarkable rapidity.

Young of Johns Hopkins Clinic said that in his clinic all other treatments have been replaced by that recommended by Rosenwald. The results are most gratifying, the time of healing being reduced about 75%. Old rebellious chancroids are now practically never seen.

Description

The Chancrol Treatment consists of two parts, a solution and an ointment, prepared according to a modified formula of Dr. Leon Rosenwald. The technic of application accompanies the packages.

**Chancrol Solution*

Calomel	2.84 Gm
Zinc Sulfate	5.67 Gm
Opium	0.09 Gm
Procaine Hydrochloride	0.71 Gm
Lime Water	q s 1 fl oz
Alcohol content,	4.5%

Chancrol Ointment

Zinc Oxide	6 25%
Boric Acid	6.25%
Gum Camphor	6 25%
Starch	6.25%
Phenol	2 25%
Petrolatum	q s 1 oz

*Supplied***Chancrol Combination*

Consisting of 1 oz solution in glass stoppered bottle and 1 oz ointment in jar

Code Word

Complete in box

GARLAND

**Chancrol Solution*

1-oz bottle

GRANDLY

Chancrol Ointment

1-oz jar

NESTLE

1 pound jar

NIBBLE

*Orders for the Chancrol Combination and for Chancrol Solution must mention the purchaser's Federal narcotic registry number. We are not permitted to ship without recording such registration number. It is not necessary to send a Federal narcotic blank.

CHOLO-GLYCO*Indications*

Conditions due to a deficiency of bile

Advantages

Cholo-Glyco caplets and tablets, by supplying bile salts, composed largely of sodium glycocholate and sodium taurocholate, stimulate excretion of bile by the liver which needs be distinguished from the emptying of stored bile from the gall bladder into the intestines.

It is the experience of some clinicians that the majority of cases of jaundice, bilious colic, and other toxic conditions covered by the term "hepatic insufficiency" may be laid to the production of an insufficient amount of bile, fats are not properly emulsified and putrefactive action takes place, constipation results and is likely to be ac-

accompanied by sick headache, stomach derangement, jaundice and bilious colic, coated tongue, and irritable disposition

Cholo-Glyco is designed to get to the bottom of the trouble by thinning the bile and stimulating peristaltic action

Formula

Bile Salts Compound	1 1/6 gr
Dioscorein	1/4 gr
Sodium Succinate	1 gr
P E Cascara Sagrada	1 gr

Physiological Action

The bile salts, sodium taurocholate and sodium glycocholate, are true cholagogues since they encourage the formation of bile in the liver. Dioscorein (wild yam or colic root) tends to overcome colicky pain. Sodium succinate stimulates liver secretions. Cascara has little action in the small intestines but increases peristaltic activity in the colon. It is included for its mild laxative effect while more natural elimination is being restored. It is claimed that unlike most cathartics it need not be taken in increasing doses.

Supplied

In Caplets, Blue, Sugar Coated

	<i>Code Word</i>
1/2 doz bottles of 100 caplets	PALACE
1 doz bottles of 100 caplets	PALADIN
Bottle of 500 caplets	VIRTUE
Bottle of 1000 caplets	USURP
5000 in bulk	WADDLE

In Tablets, Chocolate and Sugar Coated, Pink

	<i>Code Word</i>
1/2 doz bottles of 100	HOODED
1 doz bottles of 100	HOPEFUL
Bottle of 500	RADISH
Bottle of 1000	IMBIBE
5000 in bulk	KIDNAP

Dose

One to three caplets or tablets two hours after meals, three or four times a day. As an average dose, two are taken.

CITRACE

Indications

In disturbances of the urinary system requiring a diuretic action Equally appropriate when a diuretic effect is desired as part of the treatment of fevers, influenza and congestive conditions

Formula

Potassium Citrate	30 grs
Potassium Acetate	30 grs
Buchu Infusion	2 drams
Triticum Infusion	2 drams
F E Hyoscyamus	2 mins
Aromatic base, q s, ad	1 oz

Advantages

Citrace an alkalinizing diuretic, increases the excretion of urine, the sweat, and excretions from the bronchial and other glands through increasing the saline concentration of the blood Potassium citrate and acetate cause an increased excretion of carbonate thru the kidneys with a change of the pH of the urine to the alkaline side In addition, the preparation has stimulating, soothing and diaphoretic qualities

*How Supplied**Code Word*

Pint bottle	GLORY
Gallon bottle	GLOVE

Average Dose

One to two tablespoonfuls, three times a day A high fluid intake aids the action of Citrace

EPHEDRINE

Indications

To prevent or ameliorate the paroxysms of bronchial asthma, to reduce nasal congestions as in hay fever

Contraindications

Should be used cautiously in cases of heart or vein disturbances, thyroid disease, and in nervous individuals

Advantages

In its chemical structure ephedrine is similar to epinephrine, but it is more stable, its action slower and more prolonged, and the dose required is larger

Ephedrine, unlike epinephrine, is effective by mouth. It may also be given intramuscularly, intravenously, and by local application. Intolerance to epinephrine does not contraindicate the use of ephedrine.

The therapeutic qualities of the hydrochloride and the sulfate forms of the salt appear to be the same, but the hydrochloride has been shown to contain 4.8% more ephedrine by weight than the sulfate. The sulfate when applied to the mucous membranes as in the nose is free of "sting."

Physiological Action

Ephedrine effects are apparently due chiefly to sympathetic nervous system excitation. It causes a prolonged rise of blood pressure due principally to vaso-constriction. The action of the heart is strengthened by small and depressed by large doses.

Like epinephrine, it causes dilation of bronchi and locally applied contracts the capillaries. It is an excellent agent to cause dilation of the pupils of the eye, and this was its only use in the United States for many years.

PREPARATIONS OF EPHEDRINE HYDROCHLORIDE

Supplied

Ampules

1 cc, 50 mgm ($\frac{3}{4}$ gr), box of	12
1 cc, 50 mgm ($\frac{3}{4}$ gr), box of	25
1 cc, 50 mgm ($\frac{3}{4}$ gr), box of	100

Code Word

DOGMA
TICKLISH
EBONY

Caplets, Sugar Coated, Red

24 mgm ($\frac{3}{8}$ gr), bottle of	100
24 mgm ($\frac{3}{8}$ gr), bottle of	500
24 mgm ($\frac{3}{8}$ gr), bottle of	1000
48 mgm ($\frac{3}{4}$ gr), bottle of	100
48 mgm ($\frac{3}{4}$ gr), bottle of	500
48 mgm ($\frac{3}{4}$ gr), bottle of	1000

PARLOR
VESTMENT
UNTIMELY
PELICAN
VULCANIZE
UNTOLD

Solution, 3%

1 1-oz bottle,
$\frac{1}{2}$ dozen 1-oz bottles
1 dozen 1-oz bottles
1 Pint bottle,

GINGHAM
LEAKY
LEATHER
GLUTTON

Therapeutic Notes

IN ASTHMA

Apparently the greatest value of ephedrine is as a prophylactic against the broncho-spasms of asthma. In twenty-five cases of bronchial asthma, Middleton and Chen¹ controlled the attacks in nine cases, obtained improvement in eight and inconclusive or negative effects in seven. Leopold and Miller used ephedrine in fifty-nine cases of bronchial asthma, with complete temporary relief in 56% of the cases. Among these, 84% of the allergic and 100% of the reflex nasal cases responded.

Dose

For adults, one caplet about every four hours. It is well to begin with caplets of 24 mgm ($3/8$ gr) and to increase the dose as response warrants.

Contents of one to two ampules of 0.05 Grams ($1/4$ gr) each may be given for a more prompt effect.

For children the dosage has ranged from 12 to 50 mgm (about $1/5$ to $3/4$ gr), in some given every four hours, in others only as called for by symptoms.

HAY FEVER

Of twenty-four hay fever patients of Gaarde and Maytum,² thirteen, or 54%, obtained pronounced relief from symptoms for four hours or more. The average relief was about six hours. Seven patients (20%) secured partial relief. Four patients were unable to tolerate nervous symptoms caused by the ephedrine, with consequent ineffectiveness.

Mild attacks have been conveniently stopped by a spray of Ephedrine Hydrochloride Solution 3%. The effect lasts from one to three hours.

Dose

One caplet of 24 mgm ($3/8$ gr) or 48 mgm ($3/4$ gr) should be taken twice daily. Some hay fever patients exhibit nervous manifestations under ephedrine administration that may necessitate discontinuing the treatment. This is perhaps due to a hypersensitive or neurotic character of these individuals.

ENURESIS

Satisfactory results have been reported from the use of ephedrine hydrochloride in the treatment of enuresis in children. In most cases, one dose at bedtime was sufficient, some required also an alkaline belladonna mixture by day. Incontinence during both day and night was controlled by an additional dose in the morning. No symptoms of intolerance were seen.

Dose.

One 3/8 grain caplet at bedtime as needed

RHINITIS AND CORYZA

One of the most useful preparations of Ephedrine is the Nasal Jelly, described below

Ephedrine Compound Nasal Jelly

Contains Ephedrine Sulfate 1% with sodium chloride in a glycerated, water-soluble jelly base

In the nasal mucosa there is normally a continual excretion of slightly antiseptic serous and mucoid fluid which moistens the surface and in which cilia beat to humidify the inspired air. In an infection, congestion of the mucous membrane, blockage of secretions, contact with toxins, and later drying of the purulent film impairs or paralyzes ciliary activity.

If effectively applied, ephedrine shrinks the membrane of the nose and sinuses and obviously relieves the victim of a cold to the extent of the temporary decongestion, but it does more. Unloading the mucosa of held, purulent secretions and moistening of the surface helps to release the cilia and to restore the curative effect of alternating pressure from inspired and expired air upon the epithelium.

Sodium chloride as a vehicle for ephedrine is of importance because investigators have found physiological salt solution does not interfere with the ciliated membrane. On the other hand, distilled water stops action of the cilia. Oils—mineral and vegetable—which include eucalyptol, menthol, and thymol, distinctly retard the flow of excretions. There is thus an earlier end to the infection and a measure against chronic sinusitis from the use of ephedrine in sodium chloride.

1 Arch Int Med XXXIX, 385, 1927

2 Am J Med Sci CLXXIV, 635, 1927

Applied

To get the real benefit of Ephedrine Compound Nasal Jelly, it must be applied with the patient supine and remaining so until the jelly has partly liquefied. The head is held low and on the right and left sides in turn. This is necessary if the solution is to reach the intricate surfaces of the upper nasal areas.

A solution of Ephedrine 1% in physiological salt may also be utilized. This can be prepared, if desired, from the 3% solution listed on a previous page.

Supplied

In collapsible tubes with nasal tips

$\frac{1}{2}$ oz tubes, dozen

$\frac{1}{2}$ oz tubes, half-dozen

Code Word

MAHOGANY

MATERNAL

GLYCEROPHOSPHATES-STRYCHNINE COMPOUND

Elixir

Indicated

As a tonic, particularly when there is desired a supply of phosphorus in a non-toxic form, which is thought to stimulate phosphorus metabolism.

Formula

Each fluid ounce contains

Sodium Glycerophosphate	8 grs
Calcium Glycerophosphate	4 grs
Ferric Glycerophosphate	1 $\frac{1}{2}$ grs
Strychnine Glycerophosphate	1/30 gr
Sodium Nucleinate	1/5 gr
Lactic Acid	0.8%
Aromatic vehicle	q s

Supplied

Code Word

Pint bottle

Gallon bottle

GLEAM

GLIDE

Dose

One to two teaspoonfuls three times a day after meals

GWIA-LYPTUS COUGH ELIXIR

Indications

Coughs due to colds and minor chest irritations

Description

As may be seen the constituents are drugs that have long been widely used in inflammations of the throat and bronchi

Each fluid ounce contains

Potassium Guaiacol Sulfonate	8 grs
Oil Eucalyptus	4 mins
Tartar Emetic	$\frac{1}{8}$ gr
Creosote	$\frac{1}{8}$ min

In a specially flavored glycerinated vehicle

Physiological Action

The principal remedial effect of Gwia-Lyptus in bronchial irritations, inflammations, and congestions is obtained from its potassium guaiacol sulfonate content. Aided by the glycerinated base, it penetrates and soothes the throat and allays the cough. As the preparation is non-alcoholic there is nothing to irritate the throat.

Gwia-Lyptus has a distinct stimulating effect upon the bronchial mucous membrane and is an expectorant and antipyretic. It is almost tasteless, is generally non-irritating to the stomach and other mucous membranes and is freely absorbed from the intestines. A very small amount of creosote is included as a support for the potassium guaiacol sulfonate.

Antimony and potassium tartrate (tartar emetic) promotes the expulsion of mucous from the respiratory tract through its expectorant action. Oil of Eucalyptus is included principally for its help in repairing the mucous membrane.

Supplied

In 3-ounce bottles with tear-off dispensing label. Also in pints and gallons.

One dozen 3-oz bottles
Pint bottle
Gallon bottle

Code Word

LANDMARK
GRATEFUL
GENTEEL

Dose

Adults, one to two teaspoonfuls every three hours, children, 3 to 10 years of age up to one teaspoonful every three or four hours.

HYOLIN

Indications

Symptomatic relief of primary dysmenorrhea

Formula

P E Hyoscyamus	5/6 gr
Lupulin	4 grs
Cimicifugin	½ gr
Ephedrine Hydrochloride	⅛ gr

Physiological Action

It has long been accepted that, regardless of what may be the origin of primary or essential dysmenorrhea, the immediate cause is abnormal spasmodic contraction of the smooth muscles of the uterus. This explanation has been carried a step further in the advancement of the theory that in the menstrual cycle, the mucosa reaches maximum vascularity and the uterine muscles contract to break down the thickened endometrium, but menstruation is resistant.

The recurrent effort of the involuntary or striated muscle to lift off the dense mucosa, in the course of time changes rhythmic contractions to more violent, deranged, painful contractions. The intensity and duration of the dysmenorrhea is directly dependent upon the degree of stubborn adherence of the degenerated blood vessels to the wall of the uterus. Upon initiation of menstruation the thickness of the mucosa decreases until the arrhythmic contractions cease, and the pain with them.

Correction of the pelvic pain and congestion obviously lies in relaxing the muscles of the uterus at the time of greatest growth of the endometrium—just at the time for menstruation. This Hyolin appears to do. It tends to relieve contractures chiefly of unstriated muscles. It reduces irritability especially of the genito-urinary tract and exerts a sedative action on the cerebral cortex. In addition to its use in relief of dysmenorrhea it may also be employed to allay the nervous irritation of hysteria.

The overcoming of dysmenorrhea is acknowledged often to be difficult. But non-surgical measures have increased the percentage of good results and naturally will be utilized before resorting to curettage. Having ruled out cases truly due to antelexion and subinvolution of the uterus, membranous and other secondary dysmenorrheas, a treatment regime might begin with the prompt symptomatic relief

of the painful contractions by Hyolin, the modifying of constitutional defects with advice on diet and judicious rest and exercise, the correction, if present, of psychic factors based on fear, and the giving of substitutive gland material from the corpus luteum. The purpose of the latter is to reduce uterine motility through the favorable action of progesterone.

The experiments of Reynolds were corroborative of the belief that estrone, the ovarian follicular secretion, activates the muscle and resulting contractions of the uterus and that progesterone from corpora lutea inhibits them (See page 197)

Supplied

In Blue Sugar Coated Caplets

Code Word

Bottle of 100, one	PALFRY
Bottle of 100, half dozen	PALISADE
Bottle of 100, dozen	PALMETTO
Bottle of 500	VITAL
Bottle of 1000	UNROBE
5000 in bulk	WAGON

Dose

Two caplets during the day before the expected onset of pain, then 1 caplet every 6 hours for the first 2 days. In girls at the age of puberty, half the above dose is usually sufficient.

KARABIM

Bulk Laxative

Indicated in

Chronic constipation

Advantages

Karabim is an outgrowth of successful laxative therapy with Karaya-Breon. It possesses the superior swelling or "bulk" properties of karaya with a substantial quantity of vitamin B complex for its intestinal tonic effect.

In its passage through the stomach and intestines, it absorbs water and expands about one hundred times its former volume, forming a demulcent, gelatinous substance. Consequently, there is a great increase in the bulk of the intestinal contents tending to distend the walls of the bowel. This stimulates the production of a reflex

peristalsis which overcomes delay in passage. This "mechanical laxative" accentuates the normal physiological processes concerned in the propulsion of the intestinal contents through the alimentary canal. It does not involve irritation or direct stimulation of the intestinal walls—effects which accompany the employment of certain drugs and which, too frequently, lead to formation of the laxative habit.

Karabim softens the feces due to a limited increase in the amount of moisture they retain. It does not affect digestion. When the swollen gelatinous particles are examined microscopically, they are found to harbor no undigested particles of food. It has five or six times the swelling power of psyllium seed and its granules do not coalesce nor form a tenacious clot as occurs with psyllium *in vitro*.

The effect of karaya is principally in the small intestine, but vitamin B accomplishes a similar duty in the colon.

Description

Karabim appears as brownish, irregular crystals, is aromatized and palatable. It is composed of karaya, the dried sap of an East Indian tree, to which is added vitamin B complex from yeast. Each teaspoonful of Karabim furnishes not less than 20 International Units (50 Sherman Units) of vitamin B-1 and 10 Bourquin-Sherman Units of vitamin G (B-2). This represents the vitamin B-1 content of 2 cakes of average moist, compressed yeast, and the vitamin G (B-2) content of $\frac{1}{2}$ cake.

Physiological Action

Mechanical laxatives are of two types: (1) Those which act by softening the intestinal contents, thereby facilitating the propulsion of fecal matter through the intestine. With this group there is no increase in the bulk of the intestinal contents, and therefore, no peristaltic reflex is invoked. Examples are mineral oil, oil with agar or psyllium and olive oil. (2) Certain hygroscopic substances which are administered in comparatively small volume and which, during their passage through the intestinal tract, absorb water and expand considerably. As a consequence, the bulk of the intestinal contents is greatly increased, which reflexly stimulates peristaltic action.

Karabim is fortified with vitamin B complex because a deficiency of the vitamin results in chronic constipation. This is but part of a long train of defects beginning with indifferent appetite and ending

with beriberi blamed upon a lack of vitamin B-1. The degree of atonicity when it occurs in experimental animals is surprising. Sparks and Collins fed rats a diet deficient only in vitamin B-1. A lack of muscular tone in the colon resulted in 70% of the animals.

The number in which the change to atonicity occurred was not so striking as the amount in each animal, the average increased in volume of the colon being more than double— 104%.

Common symptoms of digestive dysfunctions related to deficiencies of the vitamin have repeatedly been demonstrated. In addition to interrupted movement of the intestinal contents there have been shown, experimentally, impaired assimilation, reduced protection leading to infection of the mucous membrane of the bowel, and consequent systemic infection. Finally there are the symptoms of malnutrition of the nervous system that have caused vitamin B-1 to be called "the antineuritic vitamin."

Vitamin G (B-2) deficiency is perhaps more prevalent than that of B-1, if we may lay pellagra and more particularly pre-pellagrous states of defective nutrition to deprivation of B-2.

Supplied

In $\frac{1}{4}$ and $\frac{1}{2}$ lb cans which are provided with a spout to permit contents to be poured, and in 5 pound, bulk cans

	<i>Code Word</i>
1 doz 4-oz cans	ONWARD
$\frac{1}{2}$ doz 4-oz cans	OPTIONAL
1 doz 8-oz cans	ORATOR
$\frac{1}{2}$ doz 8-oz cans	ORCHARD
1 5-pound can	ORDEAL

Dose

One or two teaspoonfuls of Karabim are prescribed twice daily, preferably three hours after breakfast, and one hour before bedtime. The crystals are swallowed without chewing followed by a couple of glasses of water. In about an hour additional glasses of water are taken.

Karabim with Cascara

Occasionally physicians request a preparation containing cascara for the treatment of cases requiring stimulation, especially in the colon. For these, Karabim with Cascara is available. In this there is the equivalent of six minims fluid extract cascara to each teaspoonful of the crystals.

The sizes are the same as for Karabim without Cascara.



TO INSURE THE REMOVAL OF FIBERS and other foreign substances solutions are "light inspected" before being filled into ampules or vials. Inspection is repeated after sealing of the ampule and sterilization of the preparation to make doubly certain that the solution is free from insoluble matter of any kind.

LIRON

Liver—Iron—Arsenic—Vitamin B

Indicated in Hypochromic Anemias

Its most noticeable benefits are in anemia from hemorrhage, malnutrition or under-nutrition from dietary deficiencies, pathological changes in the alimentary tract, anemia due to sprue, paroxysmal hemoglobinuria and myxedema

Advantages

Liron, plus the diet, conveniently yields all the elements that the physician needs to overcome secondary anemia when it supplements his efforts to find and eliminate the cause. The liver constituent of Liron is an extract from fresh bovine livers, standardized. It has been said that the apparent value of whole liver with added iron in the treatment of nutritional anemia and vitamin lack may be laid to its protein and vitamin content rather than to a specific blood-regenerating material.

Liron is designed to aid the body to re-establish an adequate quality of hemoglobin, and an increased number of vigorous red blood cells and then to improve the channels through which these new life-giving elements are carried to all the parts of the system.

Formula

Liver Extract representing fresh liver	10 Gms (1/3 oz)
Ferrous Sulfate U S P XI	65 mgms (1 gr)
Arsenous Acid	0.11 mg (1/600 gr)
Vitamin B-1 (Crystalline)	30 International Units

Physiological Action

A deficiency of both iron and the material that corrects pernicious anemia is not uncommon, according to Minot. He has found that while multiple deficits occur in anemic persons one material lack is outstanding and that whole liver, exclusive of the factor used in pernicious anemia, as well as iron can overcome anemia due to chronic blood loss.

The work of iron is not completed with its functions of joining in the formation of red cells and becoming the important portion of the pigment-hematin. It is also intimately linked with body processes of oxidation, reduction and assimilation.

As iron must be in the ferrous form before absorption occurs in the intestine, the ingestion of ferrous compounds seems an obvious short-cut to hemoglobin building. Ferrous sulfate may be taken in little bulk.

Until its exact physiological action is known, it is enough that the effect of arsenic in blood-building is probably to be explained in part by destruction of weak or diseased cells followed by generation of more vigorous ones. This is done through stimulation, not only of the blood-making tissues, but also by increased nutritive and circulatory activity.

The principal circulatory effects of arsenic are exerted upon the blood and lymph vessels, especially the capillaries, which are dilated. The effect of this vascular dilatation and increased passage of lymph through the membranes is to improve cell nutrition, this in turn strengthening the heart and extending the benefit to the circulation. This alterative action of arsenic is possible because relatively small quantities of the drug induce vital reactions that do not involve the destruction of healthy tissue and cells. It is for these reasons that Liron includes arsenic.

Liver contains an appreciable amount of vitamin B-1. This is the factor often referred to as the antineuritic vitamin whose deficiency in the severest extent results in the disease beriberi. The name "Thiamine Chloride" proposed by Dr. R. R. Williams will probably designate vitamin B-1 in the future.

The desire for food seems to be a direct consequence of sufficient vitamin B-1 intake because failure of appetite follows vitamin B-1 deficiency and awakened desire for food follows the separate administration of the vitamin. The downward sequence is B-1 deficiency, anorexia, diminished intake, anemia, loss of weight. A substantial amount of vitamin B-1 is added to Liron to aid in reversing this sequence and thereby correct the anemia.

An increase in the voluntary food intake of a mentally incompetent young woman was reported by Newburgh from about 400 to 2000 calories a day simply through the giving of vitamin B-1.

The time required to obtain its curative effect is dependent in a large degree on the route by which it is administered. Absorption from the gastrointestinal tract is dependable and rapid enough in most cases, but not when the deficiency is of an advanced type. In these, injections of the vitamin in solution should be resorted to.

A committee on nutritional problems of the American Public Health Association in 1934 attempted to find "how much is enough" of any vitamin. Their answer regarding vitamin B-1 was 200 International Units per day as the minimum requirement to prevent clinical disorder, with larger intakes necessary against well-defined symptoms of deficiency. This amount is in general agreement with the requirements arrived at by G. R. Cowgill of Yale. The suggested dosage of Liron provides 360 units per day.

Supplied

In Caplets, Maroon, Sugar Coated

	<i>Code Word</i>
One bottle of 100	PARASOL
Three bottles of 100	PARBOIL
Six bottles of 100	PARDON
Twelve bottles of 100	PARENT
Bottle of 500	VULTURE
Bottle of 1000	UNSPOTTED

Dosage

To obtain a distinct improvement in red cell number and hemoglobin percentage, four caplets three times a day are ordered for the average adult case. This gives daily the approximate equivalent of fresh liver, 4 ounces, ferrous iron 3 grains, arsenic 1/70 grain and 360 International units of vitamin B-1. The single dose suggested may be decreased or increased one caplet as the degree of anemia warrants.

LOBIODRIN

Indicated

As a preventive of paroxysms of bronchial asthma

Contraindications

High blood pressure and nervous irritability may be contraindications depending on the effect of small doses of ephedrine

Advantages

Lobiodrin combines in a well tolerated and palatable formula, three drugs, each of great value in the amelioration of the dyspnea of asthma—lobelia, used in asthma since 1813, iodine (in an organic form), and ephedrine which since it has established itself in the practice of medicine in the Western World has shown perhaps its best effects in the treatment of asthma

It is a first ranking preventive of asthmatic paroxysms, when taken early before the attacks are expected and in the alleviation of chronic symptoms when shown by low grade spasms of the bronchioles

Formula

Po Ext Lobelia	¼ gr
Calcium Iodobehenate (Organic Iodine)	1½ grs
Ephedrine Hydrochloride	¼ gr
Potassium Arsenite	1/100 gr
Po Ext Sarsaparilla	1/8 gr

Physiological Action

Relaxes spasms of the bronchioles, reduces excessive viscosity of bronchial secretions and is a respiratory stimulant

Although iodine has no direct influence upon the paroxysms of bronchial asthma, by its effect in increasing and liquefying the bronchial secretions it is one of the most frequently serviceable drugs Calcium iodobehenate is an organic iodine that is less irritating to the stomach and is free from iodism in the amounts used

Lobelia is an antispasmodic and respiratory stimulant In small doses as in Lobiodrin, ephedrine stimulates the nerve endings of the sympathetic system with relaxation of bronchial paroxysms There is also a vasoconstriction with rise of blood pressure and increase in rate and force of the heart Large doses excite the parasympathetic endings and thus lead to a reversal of some of these effects

Supplied

In Caplets, Sugar Coated, Blue, No. 448

	<i>Code Word</i>
Bottle of 100	PALMY
½ dozen bottles of 100	PARISH
1 dozen bottles of 100	PANCAKE
Bottle of 500	VOCAL
Bottle of 1000	UNRULY

In Compressed Tablets

	<i>Code Word</i>
½ dozen bottles of 40	HOLIDAY
1 dozen bottles of 40	HOMAGE
Bottle of 100	HECTOR
½ dozen bottles of 100	HOSTILE
1 dozen bottles of 100	HOSTLER
Bottle of 500	RAGGED
Bottle of 1000	INCIDENT

Dose

In the average adult, one or two caplets or tablets are taken one to two hours before an expected paroxysm, or two may be taken at bedtime when the paroxysm is expected during the night. To alleviate more constant dyspnea one is taken every four hours.

LOBIODO

Is the same formula as Lobiodrin, except that it contains no ephedrine. It is dispensed to those unable to take the latter drug. It may be given to nervously unstable individuals and those with circulatory disturbances who are adversely affected by ephedrine.

Supplied

	<i>Code Word</i>
Bottle of 100 Compressed Tablets	HEEDFUL
Bottle of 500 Compressed Tablets	RANGE
Bottle of 1000 Compressed Tablets	IMPRINT

MANGANESE DIOXIDE

Used experimentally to metabolize sugars by oxidation. There have been isolated reports of the successful use of this substance in acne vulgaris.

This manganese dioxide contains non-manganese impurities of only 0.2%.

Supplied

In capsules of 5 grains each

Bottle of 100 capsules
 Bottle of 500 capsules
 Bottle of 1000 capsules
 5000 in bulk

Code Word

FORTUNE
 QUIVER
 JAILER
 SAPLING

Dose

One capsule 3 times a day after meals with a full glass of water

MERC-MUTH**Surgical Dressing Powder***Indications*

Abrasions, ulcers, blisters, impetigo and weeping dermatological erosions It is also insufflated in some forms of vaginitis

Advantages

It is antiseptic, non-irritating, mildly astringent and tends to allay itching When applied to ulcers or mucosae it clings and protects the surface from air and from friction of the clothing or covering On minor wound dressings, it mechanically absorbs the secretions and thus, through drying, renders the wound less suitable to bacteria The drying action also causes some astringency

Description

Merc-Muth is composed of mercury oxycyanide 1 10000 with organic bismuth and balsam peru compounds in a special talc base It is furnished in attractive, orange and black, transparent cylinders with perforated tops The cap is removed, the tube is pointed at the surface to be protected and the flexible sides quickly squeezed Merc-Muth is thus accurately sprayed on the area to be protected The cylinder-applicators contain one-half ounce of powder each

Supplied

Half dozen cylinders
 One dozen cylinders
 One-pound bottle
 Five-pound can

Code Word

OUTSTRIP
 OUTWARD
 OBSTINATE
 ONSLAUGHT

POMFRAX

Indications

Nutritional diarrhea of children

Advantages

The use of raw apple diet in diarrhea had its origin in the work of Heisler of Germany in 1928. The treatment was popularized in Europe by Moro and has recently been put into effect in the United States.

For practical reasons the material now generally used is a dried powder prepared from ripe, raw apples. Such apple material is virtually essential because of the difficulty of procuring ripe apples of a proper kind during the season when diarrhea is most prevalent. Raw apple scrapings discolor to a brown pulp from oxidation a few minutes after preparation and do not improve the appetite by their eye appeal. The time consumed in scraping the quantity of apples necessary is onerous.

Malyoth¹ reasoned that the chief benefit in the apple treatment of diarrhea comes from the pectin content of the fruit. This has been apparently fully confirmed in clinical experience. In the processing of Pomfrax it is considered that protopectins are set free from the cellulose without changing the acidity of the fruit. This is thought to produce twice the amount of the pectin contained in the fresh apple.

Description

Pomfrax is a concentrate of prime, ripe Washington apples, dehydrated and cellular fractured, to which has been added colloidal kaolin 10%.

CELL CRACKING PROCESS

Many substances appear to be quite dry when in reality they contain considerable amounts of moisture. The average wheat flour contains 11.4% moisture, dried apples 28% (U. S. Dep. of Agri., Bull. No. 28). The apple substance of which Pomfrax is composed is concentrated so that approximately but 2% of the moisture remains. The additional expense is justified by the high ratio of concentration which is the first requirement in the cell-cracking process to which the apple substance is subjected.

All the nutritive or therapeutic substances of fruits are within the

cellulose coverings of the component cells. Cellulose is not broken down by the acids or enzymes of the alimentary tract. "Even such a soft substance as a piece of apple may pass through the system unchanged."² Unless the cell walls of the apple are crushed by mastication or other means, the nutrients contained within are unavailable. The dehydration which expels 98% of its moisture renders the cell extremely friable. The material is then mechanically hammered which fractures a great proportion of the cellulose cell coverings and thus makes available for assimilation an increased amount of pectin and other values present in the apple material. Thus a given quantity of finely pulverized Pomfrax is not only equivalent to the quantity of fresh apple of which it is the concentrate, but its availability for assimilation has by the cell fracturing been increased perhaps 100 times.

Supplied

	<i>Code Word</i>
One 6-oz bottle	ORGANIST
Three 6-oz bottles	OUTBURST
Six 6-oz bottles	OUTCAST
Twelve 6-oz bottles	OUTDO

Administration

A child of two years may receive during 24 hours 45 grams of Pomfrax in one pint of liquid. In practice this is measured as ten heaping teaspoonfuls of Pomfrax in four cupfuls of liquid. It is mixed in weak tea, skimmed milk or water, forming a gruel which is fed from a spoon.

As the diarrhea subsides the child is gradually placed on a low-residue diet of cooked bland cereals, toast, gelatin, and broth fortified with cereal, after several days of the transition diet, boiled milk and vegetable purees. In mild cases, the child may be limited to Pomfrax for only 12 hours. In this event, care should be used in returning gradually to a normal diet, with Pomfrax added to other food throughout the transference.

1 Malyoth G, Kln Wehnschr 10 1159, 1931

2 Rosewarne, D D, *Science of Nutrition*

3 Manville, I E, Bradway, E M, and McMinis, A S, Can M A J, 36 252, 1937

RESORBENZ LOTION

Indications

External symptomatic relief of inflammatory skin diseases characterized by vesiculation, infiltration, and itching

Advantages

Resorbenz Lotion not only tends to overcome skin inflammation, but also helps remove the diseased surfaces. It seems to exert a tonic action toward the skin.

Description

This solution for external application is one which physicians treating certain dermatopathic conditions feel has a powerful restraining effect on the uncomfortable symptoms of the skin diseases described. It contains

Resorcinol	Glycerin
Benzoic Acid	Witch Hazel
Boric Acid	Acetone
Methyl Salicylate	Alcohol 74%
Mercuric Chloride	

Caution

Applications of Resorbenz are sometimes followed by a burning sensation. To alleviate this, the patient should be supplied with a solution of calomine or other soothing medicament.

Physiological Action

The constituents in Resorbenz Lotion will soften and finally cause the separation of horny matter of the epiderm. When applied to the skin, the solution is escharotic and antipruritic.

Supplied

Pint bottle
Quart bottle
Gallon bottle

Code Word

GREETING
GRIDDI F
GRIMACE

SOAP COCONOIL

Solution

A bland cleanser for the skin Will not cause irritation of the hands even though used continually For use in hospital, laboratory and office when a powerful germicide is not required It contains 17% coconut oil soap

Supplied

The 4-ounce bottles have shaker tops

1 doz 4-oz bottles
 1/2 doz 4-oz bottles
 Pint bottle
 Quart bottle
 Gallon bottle

Code Word

LATIN
 LEADER
 GRANITE
 GRIMLY
 GOVERN

SOAP, LIQUID MERCUSEPTIC

Contains mercury cyanide 1%, in refined coconut oil soap

Mercuseptic Soap may be used full strength, but usually it will be desired to dilute it This may be done by the addition of distilled water, one part Liquid Mercuseptic Soap to three parts distilled water, making a 1/4% solution

It is appreciated in surgery for cleansing the field and for lubricating instruments It does not corrode steel or nickel

It is less irritating than might be expected in a mercury preparation but is not suitable for application many times in one day Coconut Soap, described above, is prepared for routine cleansing

Supplied

The 4-ounce bottles have shaker tops

1 dozen 4-oz bottles
 Pint bottle
 Gallon bottle

Code Word

LANGUAGE
 GOBLIN
 GIGGLE

SULFANILAMIDE

(para-amino-benzene-sulfonamide)

Indications

Infections caused by hemolytic streptococci. Conditions in which good results have been reported are chiefly puerperal fever, erysipelas, nasal and throat involvements, otitis media, mastoiditis. Other fields in which the chemical has been tried with seeming benefit, but which require much more experience, are infections due to gonococci, pneumococci of types I, II, and III, meningococci of groups I and II, colon bacillus and staphylococci.

Advantages

"The first definite advance in the use of chemicals to combat infections since the discovery of the chemical treatment of syphilis." This is a comment that has been made concerning sulfanilamide used against hemolytic streptococci, especially the beta strains. Evidence leads to the belief that in streptococcal infections fairly prompt recovery is induced provided there are two or three days available in which to obtain the full effect of the drug.

It has been claimed that the drug finds its way into the spinal fluid, even when administered by mouth.

Description

Domagk of Germany in 1935, working with azo dye combinations, announced that a substance had been found capable of protecting mice against infection of virulent hemolytic streptococci. Later investigators learned the effect was due to but a part of the compound. The simpler chemical in the United States has now been designated sulfanilamide. This is as effective by mouth as more complex sulfonamide derivatives have been by injection.

Supplied

In 5 gram compressed tablets

6 bottles of 100
12 bottles of 100
Bottle of 500
Bottle of 1000
5000 bulk

Code Word

HARMONY
HOPELESS
REVISAL
INSULATE
FEARFUL

Dosage

The dosage is provisional at the present time. To maintain a nearly uniform concentration of sulfanilamide in the blood and tissues, administration every four hours appears preferable. In severe cases, the dose may be as high as 15 grains every 4 hours, such dosage to be maintained for 24 hours or longer, depending upon the progress of the infection and the tolerance of the patient. Usually, it is desirable to reduce the dose in 24 or 48 hours to 5 or 10 grains every four hours. Administration should be continued for one or two days after the symptoms have subsided, otherwise recurrence is not unlikely.

If it is desired to obtain a high concentration of sulfanilamide in the blood quickly, a single dose of $\frac{3}{4}$ grains (0.05 gram) per kilogram of body weight may be given, followed in six to eight hours by a more usual dose every four hours.

Therapeutic Notes

In England, Colebrook and Kenney concluded that the compound was of great value in puerperal fever. The tendency of puerperal infection due to the hemolytic streptococci to spread to cellular tissues of the pelvic walls was absent in the 64 cases treated by these clinicians. The majority of cases treated showed a fall of temperature in from 24 to 72 hours. A striking fact is contained in their summary that, where the mortality from puerperal sepsis in their hospital was 24% in 1935 it fell in 1936 when the new chemical was used to 4.7%.

The first workers in the United States to report upon sulfanilamide were Long and Bliss at Johns Hopkins. They expressed the opinion that the toxicity of sulfanilamide is low, that its therapeutic effect in experimental animals has been definitely proved, that given early it protects mice against meningococci types I and II. They further found that if treatment in experimental animals was interrupted prematurely, that is, if the infecting agent was not completely eliminated, the animals would usually succumb.

Most recently, it has been stated by Herrold of the University of Illinois that results in the treatment by sulfanilamide of 50 cases of kidney and bladder infections are distinctly successful. The results showed effects less disturbing to the patient with fewer unfavorable reactions than had been obtained with any other urinary antiseptic. He stated the drug appeared more effective against the colon bacillus

group than had mandelic acid and that it was successful also against infections in the upper urinary tract, particularly those due to the staphylococci

Caution

International laboratory and clinical experiments with sulfanilamide have quickly given it acclaim. As is to be expected, a few reports of disappointment are being made, and one of a fatality from neutropenia which possibly was due to the drug. Saline laxatives, especially magnesium sulfate, should be avoided during treatment with sulfanilamide as the development of sulfhemoglobin in the blood has been seen.

THYTOCIN

Indications

Used in conjunction with dietary correction in obesity due to deficient metabolism.

Contraindications

Exophthalmic goiter and circulatory system dysfunctions.

Advantages

The purpose of Thytocin is to assist the thyroid gland in its natural functions, as well as to increase the normal body secretions through the usual routes of elimination.

It will be seen from the physiological action of the component parts that Thytocin not only tends to decrease the weight of obese patients, but it acts as a general alterative and cleanser—serving as a tonic, diuretic, and sudorific.

The amount of thyroid substance included is a moderate dosage, reliance being placed upon this and the other constituents to work in co-operation for the desired effect. Reduction of weight will be accomplished at a moderate and consistent rate in those patients in which the drugs are indicated.

"Barron and others demonstrated that in many cases of obesity the administration of thyroid was followed by a prompt and decided loss in weight often amounting to as much as two to ten pounds the first week, and ten to thirty-five or more pounds in the course of two or three months."¹

The use of thyroid in the treatment of obesity has, according to Campbell,² brought unwarranted condemnation from some sources. He acknowledges that much damage has been done by the misuse of the drug by the laity but this is not an adequate reason for it not to be used under proper professional supervision.

It has been pointed out by Aub³ that thyroid not only increases the calories consumed in activity, but that it raises the patient's energy and desire for activity.

Formula

Thyroid Gland, desic	$\frac{1}{2}$ gr
Phytolaccin	$\frac{1}{2}$ gr
Apocynin	$\frac{1}{6}$ gr
Pilocarpine Hydrochloride	$\frac{30}{100}$ gr
P. E. Cascara Sagrada	$\frac{1}{2}$ gr

Physiological Action

Following the therapeutic use of thyroid for the correction of obesity there is simultaneously with the loss in weight an increase in the nitrogenous and phosphatic elements of the urine, indicating an augmented protein catabolism. There is even greater oxidation of the adipose tissue.

Phytolaccin is used as part of Thytacin for its purgative effect. The powerful diuretic action of apocynin and its tonic action upon the heart make it a valuable agent in the treatment of obesity in appropriate dosage.

Pilocarpine hydrochloride in a single dose of 1-20 to 1-4 gram has brought out 9 to 15 ounces of sweat. This activity as a sudorific and its quality of reducing the amount of water stored in the tissues has caused its extensive use by a section of the medical profession.

Supplied

In Caplets, Sugar Coated, Pink

Bottle of 100 with dispensing label
$\frac{1}{2}$ dozen bottles of 100
1 dozen bottles of 100
Bottle of 500
Bottle of 1000

Code Word

PAPAL
PARADE
PARADISE
VORTEX
UNSETTLE

In Compressed Tablets

Bottle of 100	HARNES
½ dozen bottles of 100	HOURLY
1 dozen bottles of 100	HOVEL
Bottle of 500	RAINBOW
Bottle of 1000	IMPEACH

Dose

A basal metabolic rate determination is of great assistance in regulating the dose. In its absence, one caplet or tablet 3 times a day after meals may be prescribed. After ten days one additional should be taken at bed time. This dosage may usually be continued until the therapeutic purpose has been accomplished or the physiological limit has been reached. Campbell² applies to thyroid the dictum. Dosage which does not unduly raise the heart rate and basal metabolism is safe.

Dietetic and hygienic correction are necessary in conjunction with Thytucin if satisfactory results are to be expected.

1 Halsey, Endoc and Metab I, 97

2 Campbell, Walter R., Canad M A J 34 41, 1936

3 Aub, Jos C., Med Clin of N A 18 1191, 1935

VITAMIN B-1

Indicated in

Loss of appetite due to vitamin B-1 deficiencies, of value in obtaining optimal growth of children. As the vitamin is an essential of the diet, its administration in concentrated form is valuable in some conditions where there is difficulty in utilizing ordinary foods in the usual way.

Description

Each compressed tablet contains 1 mg of crystalline vitamin B-1 equal to 300 International units.

Supplied

3 bottles of 40 tablets	<i>Code Word</i>
6 bottles of 40 tablets	HUMBLE
12 bottles of 40 tablets	HURDLE
	HUNGER

Therapeutic Notes

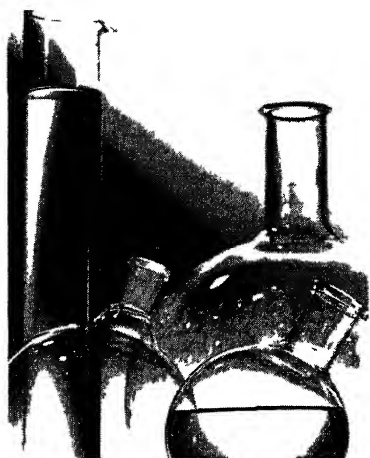
The second definitely recognized component of the vitamin B complex, that known as the antidermatitis, heat stable fraction, vitamin G (B-2), is of course not present in the tablets nor are other possible but more obscure components.

There being other causes of loss of appetite, and of malnutrition than deprivation of vitamin B, how may it be known when the administration of the concentrated vitamin will be corrective of anorexia and inanition? Probably the simplest means of diagnosis is to try the administration of vitamin B-1. Cowgill and his associates following vitamin B-1 deficiency observed under the fluoroscope reduced motility of the gastrointestinal tract. This diagnostic aid is open to many, though fewer would have the opportunity to study the same cause and effect through a stomach fistula as was permitted to Cowgill. These observations correlated with earlier findings that vitamin B insufficiency was followed by degeneration of the plexus of the sympathetic nerve between the coats of the intestine with resultant intestinal stasis.



PRELIMINARY TO FORMING 'CAPLETS' THE GRANULATED DRUGS ARE DRIED
IN CIRCULATING AIR—MODERATELY HOT AND OF LOW HUMIDITY.

CAPLETS



The word "caplet" describes drugs compressed in the familiar oblong shape of capsules, then sheathed in a thin sugar or enteric coat. The name refers to Brecon products only.

Advantage is taken of the psychological effect that colors are believed to exert. Caplets are coated in varied colors appropriate to the therapeutic purpose of each formula — stimulant drugs in bright, excitant hues and drugs whose purpose is calming in darker, tranquil shades.

ACET-ALAC-QUIN, Sugar (Coated, Red, No. 403)

Acetanilid	2 grs
Aconite Root	1/20 gr
Quinine Sulfate	1/2 gr
Atropine Sulfate	1/2000 gr
Podophyllin	1/40 gr
Po. Ext. Gelsemium	1/16 gr
Alom	1/16 gr
Capsicum	1/4 gr

Discontinuation

For therapeutic details, see page 225

Bottle of 500
Bottle of 1000
5000 in bulk

Code Word

USAGE
UNLASH
WAFFLE

CHOLO-GLYCO, Sugar Coated, Blue, No. 407

Bile Salts Comp	1 1/6 gr
Dioscorein	1/4 gr
Sodium Succinate	1 gr
Po Ext Cascara Sagrada	1 gr

For therapeutic details, see page 237

Half dozen bottles of 100	<i>4.00</i>	Code Word
Dozen bottles of 100	<i>8.00</i>	PALACE
Bottle of 500	<i>2.50</i>	PALADIN
Bottle of 1000	<i>5.00</i>	VIRTUE
5000 in bulk		USURP
		WADDLE

COLPHYSAL, Enteric Coated, Blue, No. 410

For the symptomatic relief of rheumatic fever

Colchicine	1/150 gr
Phytolaccin	1/2 gr
Sodium Salicylate	5 grs
Powdered Guaiaac	2 grs

Discontinued

Dose Two caplets every three hours for four doses, then one every three hours until effect Taken with copious water

Bottle of 500	Code Word
Bottle of 1000	VISIT
5000 in bulk	UNEQUAL
	WAGER

EPHEDRINE, Sugar Coated, Red, No. 425

3/8 gr (0.024 Gm)

Bottle of 100	<i>2.25</i>	Code Word
Bottle of 500	<i>8.25</i>	PARLOR
Bottle of 1000	<i>13.00</i>	VESTMENT
		UNTIMELY

3/4 gr. (0.048 Gm)

Bottle of 100	<i>3.50</i>	PELICAN
Bottle of 500	<i>11.50</i>	VULCANIZE
Bottle of 1000	<i>19.75</i>	UNTOLD

For other ephedrine preparations see page 239

HYOLIN, Sugar Coated, Blue, No 432

Po Ext Hyoscyamus	1/6 gr
Lupulin	+ grs
Cimicifugin	1/2 gr
Ephedrine Hydrochloride	1/8 gr

For therapeutic details, see page 245

Discontinued
Code Word

Bottle of 100, with dispensing label	PALFRY
Half dozen bottles of 100	PALISADE
Dozen bottles of 100	PAI METTO
Bottle of 500	VITAI
Bottle of 1000	UNROBF
5000 in bulk	WAGON

IRON, QUININE AND STRYCHNINE ARSENATES WITH NUCLEINATE, Sugar Coated, Red, No. 440

Iron Arsenate	1/64 gr
Quinine Arsenate	1/64 gr
Strychnine Arsenate	1/500 gr
Sodium Nucleinate	2/25 gr

Dose One caplet three or four times a day

Code Word

Bottle of 500	1.50	VIXEN
Botte of 1000	2.55	UNROLI
5000 in bulk		WAIST

LIRON, (Liver—Iron—Arsenic—Vitamin B)**Sugar Coated, Maroon, No. 445**

Liver Extract, equivalent of fresh liver	10 Gms (1/3 oz)
Ferrous Sulfate	65 mgs (1 gr)
Arsenous Acid	0.11 mg (1/600 gr)
Vitamin B-1 (crystalline)	30 International Units

For therapeutic details, see page 250

Code Word

Bottle of 100	2.50	PARASOI
Three bottles of 100	7.50	PARBOIL
Half dozen bottles of 100	13.50	PARDON
Dozen bottles of 100	24.25	PARENT
Bottle of 500	11.50	VULTURE
Bottle of 1000	19.25	UNSPOTTED

LOBIODRIN, Sugar Coated, Blue, No 448

Po Ext Lobelia	$\frac{1}{4}$ gr
Calcium Iodobehenate (organic iodine)	$1\frac{1}{2}$ grs
Ephedrine Hydrochloride	$\frac{1}{4}$ gr
Potassium Arsenite	$1/100$ gr
Po Ext Sarsaparilla	$\frac{1}{8}$ gr

For therapeutic details, see page 253

Bottle of 100	2.50	<i>Code Word</i>
Half dozen bottles of 100	14.00	PALMY
Dozen bottles of 100	26.40	PARISH
Bottle of 500	10.50	PANCAKE
Bottle of 1000	18.25	VOCAL
		UNRULY

METH-ATRO-MINE, Sugar Coated, Orange, No. 456

Methenamine	$2\frac{1}{2}$ grs
Atropine Sulfate	$1/200$ gr
Hyoscyamine Crystals	$1/200$ gr
Benzoic Acid	$\frac{1}{2}$ gr
Salol	$\frac{1}{2}$ gr

Methenamine liberates free formaldehyde when in an acid solution and the reaction thus engendered tends to annihilate infections of the urinary tract. Further alleviation of discomfort is obtained through the adequate doses of hyoscyamine and atropine which have proved this an effective agent in certain urinary irritabilities.

Dose One caplet with full glass of water four times a day

Half dozen bottles of 100	4.25	<i>Code Word</i>
Dozen bottles of 100	8.00	PARSNIP
Bottle of 500	3.40	PARTAKE
Bottle of 1000	5.25	VOLCANO
5000 in bulk	4.25	UNSADDLE
		WAITER

NUCLEIC ACID, 5 grs , Sugar Coated, Yellow, No. 460

Suggested in excessive nasal excretion due to nasal allergy, including hay fever, and sinusitis

In the nasal membranes there is a mechanism for excreting material rich in nucleoproteins. According to the work of Ruskin¹, excessive loss of nucleoproteins, as in vasomotor rhinitis, results in a deficiency of nuclein traveling in the circulation, not free but mainly with the leukocytes and readily available. A compensatory mechanism then operates to increase abnormal lymphoid tissue and there may ensue inflammation of the cervical lymph glands.

The common building-blocks of proteins, the amino acids, are easily obtained from the diet, but this is not true of an essential constituent, nucleic acid. When a deficit of this exists it may not be supplied unless furnished by definite administration. The benefit obtained by Ruskin in the treatment of certain cases involving allergy suggests that continual or perennial nasal excretion and accompanying symptoms may be corrected by replacement of nucleic acid.

Code Word

One bottle of 40

Three bottles of 40

Six bottles of 40

Twelve bottles of 40

4.35
8.35

PAUSING

PAVILION

PAYMENT

PEACEFUL

Dose Two caplets three times a day

¹ Ruskin, S. L., Arch. Otolaryngology 22: 172, 1935

THYTOCIN, Sugar Coated, Pink, No. 485

Code Word

Bottle of 100 with dispensing label

Half dozen bottles of 100

Dozen bottles of 100

Bottle of 500

Bottle of 1000

! *discontin*

PAPAL

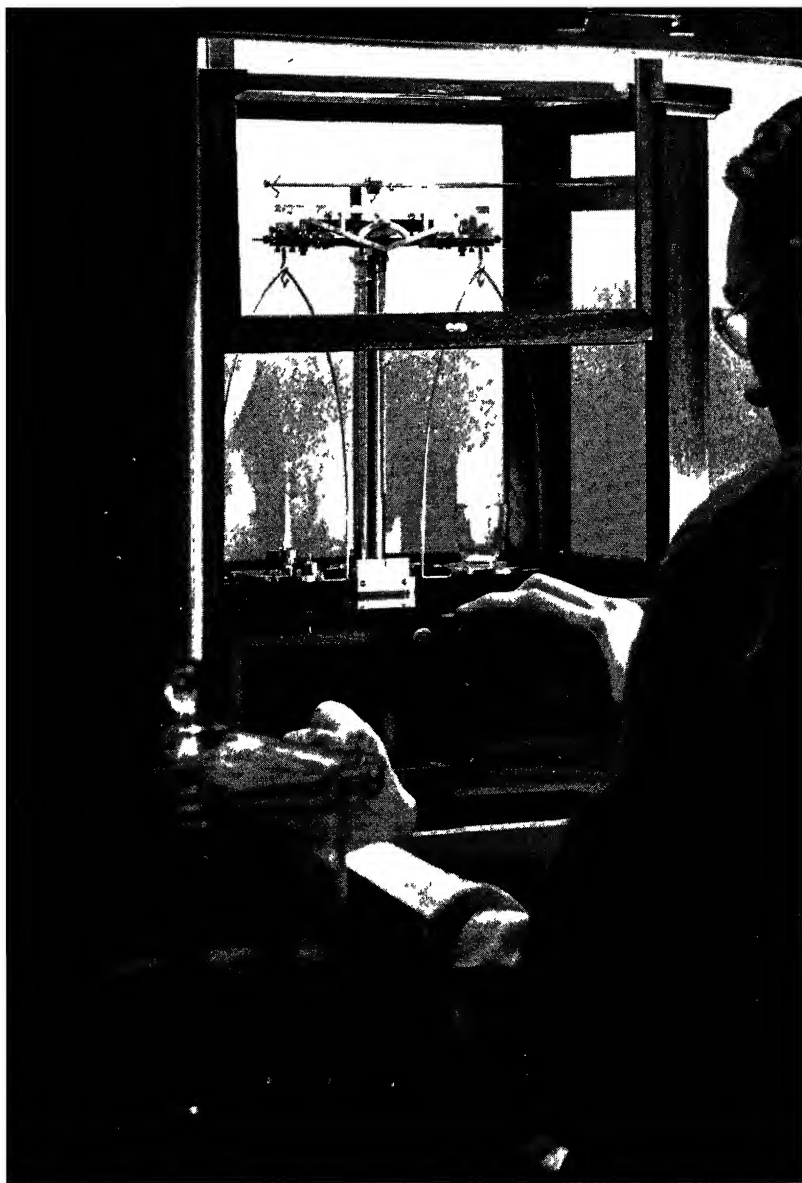
PARADE

PARADISE

VORTEX

UNSETTLE

For therapeutic details, see page 262



THE UNIFORM PREPARATION and accurate analysis of medicines require precision instruments, such as analytical balances. One of those in use in the Breon Laboratories is shown

TABLETS

Breon Tablets are manufactured with therapeutic efficiency as the paramount guide. The chemicals and drugs are selected from among the purest grades only and are assayed when practicable. Rigid control is maintained of each manufacturing step—mixing, granulating, drying, grinding, compressing, and coating. Samples of each lot of tablets are analyzed to verify their conformity to label before being released for sale.

Breon tablets will disintegrate with comparative readiness, each lot having passed tests for this property. The endeavor is to produce tablets that will reach the patient intact but which will dissolve without undue delay upon entering the system.

THE ABBREVIATIONS

The letters appearing after the names of tablets are explained as follows:

CT, Compressed Tablets, TT, Tablets Triturate (now signifying only that the tablets are compressed with flat tops and bottoms), CCT, Chocolate Coated Tablets, SCT, Sugar Coated Tablets, HT Hypodermic Tablets.

ACETANILID-CAMPBOR-AMMONIUM, Orange, SCT, No 89-A

Acetanilid	2 grs
Camphor	¼ gr
Ammonium Chloride	2 grs
Po Ext Gelsemium	1/100 gr
Po Ext Belladonna Leaf	1/480 gr
Cascarin	¼ gr
Capsicum	⅛ gr

Dose One tablet every 2 hours for 4 doses then 1 four times a day

Code Word

Bottle of 500	REBOUND
Bottle of 1000	INFINITE
5000 in bulk	KLEDIVE

ACET-ALAC-QUIN, Red, SCT, No 90

Acetanilid	2 grs
Aconite Root	1/20 gr
Quinine Sulfate	½ gr
Atropine Sulfate	1/2000 gr
Podophyllin	1/40 gr
Po Ext Gelsemium	1/16 gr
Alom	1/16 gr
Capsicum	¼ gr

For therapeutic details, see page 225

Code Word

Bottle of 500	RABBIT
Bottle of 1000	IMBED
5000 in bulk	KENNEL

ACETYL SALICYLIC ACID (Aspirin), CT, No 10

Dose 5 to 10 grs repeated in 4 hours if required

2 grs , Pink only

Code Word

Bottle of 500	REBUS
Bottle of 1000	INFLECT
5000 in bulk	KNIGHT

5 grs , White, Green, or Pink

Bottle of 500	RECALL
Bottle of 1000	INFORMAL
5000 in bulk	KNOUT

5 grs , Mottled CT, No 10-A

Bottle of 500	RIDGE
Bottle of 1000	INTEND
5000 in bulk	FLAXEN

ACETYL-PHENINE, White, CT, No 11

Acetyl Salicylic Acid	3 ½ grs
Acetphenetidin (Acetanilid Derivative)	2 ½ grs
Caffeine	½ gr

Dose 1 tablet repeated in 4 hours if required

Bottle of 500
 Bottle of 1000
 5000 in bulk

Code Word
 RECKLESS
 INGOT
 KITTENISH

Mottled, CT, No. 12

Bottle of 500
 Bottle of 1000
 5000 in bulk

RIVILE
 INSURGENT
 FISH

ACONITE-SALICYLATE-MERCURIC COMP, CT, No 113

Po Ext Aconite	3/200 gr
Sodium Salicylate	1 gr
Po Ext Belladonna Leaf	1/320 gr
Po Ext Bryonia	1/500 gr
Mercuric Iodide, Red	1/100 gr
Methyl Salicylate	q s

Dose One to 4 tablets according to age

Bottle of 500
 Bottle of 1000
 5000 in bulk

Code Word
 REDEEM
 INHABIT
 KANGAROO

ALKALINE SOLUTION, CT, No 13

Sodium Bicarbonate	5 grs
Sodium Borate	5 grs
Sodium Chloride	5 grs
Sodium Benzoate	7/24 gr
Sodium Salicylate	7/24 gr
Thymol, Menthol, Eucalyptol and Methyl Salicylate, aa	q s

For topical application One tablet dissolved in 2 to 4 oz water makes a solution of the strength usually desired for a spray or douche

Bottle of 500
 Bottle of 1000
 5000 in bulk

Code Word
 REFINE
 INK
 KANGAROO

ALOES-ERGOT-IRON, Red, SCT, No 107

Aloes	1 gr
Po Ext Ergot	1 gr
Po Ext Cotton Root Bark	1 gr

Ferrous Sulfate, Exc	1 gr
Po Ext Black Hellebore	1 gr
Oil Savin	$\frac{1}{4}$ min

Dose 1 to 2 tablets as required

Code Word

Bottle of 500

REFIT

Bottle of 1000

INLAND

5000 in bulk

KNEECAP

AMINOPYRINE, 5 grs, CT, No 172-A

Formerly Amidopyrine or Pyretodyne An antipyretic and anodyne

Climenko experimentally found aminopyrine and related compounds caused an inhibition of granulocytes in the blood If confirmed this should call for restricted use of these drugs

Dose One tablet once or twice a day as required

Code Word

Bottle of 500

REFRAIN

Bottle of 1000

INNOCENT

5000 in bulk

KNOCKOUT

AMMONIUM CHLORIDE, 5 grs, CT, No 22

Dose One tablet after meals

Code Word

Bottle of 500

REFRESH

Bottle of 1000

INSIGHT

5000 in bulk

KNOWLEDGE

AMOBAR, CT, No 22-A

For therapeutic details, see page 226

Code Word

Bottle of 500

RADIANT

Bottle of 1000

IMPROVE

5000 in bulk

KERCHIEF

AMONIDRIN, Red, SCT, No 26

Ammonium Chloride,	3 grs
Ephedrine Hydrochloride	$\frac{1}{8}$ gr
Potassium Guaiacol Sulfonate	3 grs
Calcium Creosotate	$\frac{1}{4}$ gr
Benzocaine	$\frac{1}{32}$ gr
Oleoresin Cubeb	q s

In bronchial affections, Amonidrin exerts a relaxant action upon dyspneic bronchioles and also acts directly upon the infection for the relief of irritation in the bronchial tubes and reduction of catarrhs

Dose For the adult one tablet four times a day

Code Word

Bottle of 100

HISTORY

Bottle of 500

RAMPART

Bottle of 1000

INFATUATE

5000 in bulk

KNITTING

ARSENATES OF I, Q AND S

See Iron, Quinine and Strychnine Arsenates with Nuclein

ASAFETIDA-NUX-CASCARA COMP, Yellow, SCT, No 112

Powdered Asafetida 1 gr

Po Ext Nux Vomica $\frac{1}{4}$ gr

Po Ext Cascara 1 gr

Oleoresin Ginger $\frac{3}{80}$ gr

Diatase $\frac{1}{20}$ gr

Powdered Capsicum $\frac{1}{8}$ gr

Dose One to 3 tablets

Code Word

Bottle of 500

REGAL

Bottle of 1000

INSPIRE

5000 in bulk

FLASHY

ASPIRODYNE COMP, CT, Green or Yellow, No 42

An antipyretic and anodyne for use in headaches and neuralgia

Acetyl Salicylic Acid 5 grs

Ammonium Bromide $\frac{1}{6}$ gr

Potassium Bromide $\frac{1}{6}$ gr

Sodium Bromide $\frac{1}{6}$ gr

Caffeine $\frac{1}{2}$ gr

Dose One or two tablets as required

Code Word

Bottle of 500

REGIMENT

Bottle of 1000

INSTALL

5000 in bulk

FLEXIBLE

BARBITAL SOLUBLE, CT, No 46

A soluble hypnotic and narcotic

Sodium Diethylbarbiturate 5 grs

Dose 5 grs followed by cupful of hot milk, water, or tea

See also Amobar and Phenobarbital

Code Word

Bottle of 500

REGION

Bottle of 1000

INSTIGATE

5000 in bulk

FLICKER

BILE SALTS-CASCARA, Yellow, SCT, No 47

Bile Salts Compound 1 1/6 grs

Po Ext Cascara Sagrada 1 gr

The bile is recognized as an essential secretion of the liver. Bile salts distinctly affect digestion by acting upon the pancreatic secretions. They here activate the lipase and reduce the surface tension between oily and aqueous liquids so that they are emulsifiers. Bile is thus necessary for fat digestion and assimilation, while fat in turn is required for the utilization of carbohydrates. For these reasons and because it increases peristalsis, bile reduces intestinal putrefaction and thereby decreases toxemia.

Bile salts given by mouth to 25 patients were shown to increase the flow of bile, an average of 91%. Cascara, which has acquired the lead for efficiency among mildly acting laxatives, is included in the formula.

See also Cholo-Glyco

Dose One tablet before meals

Code Word

Bottle of 500

REGISTER

Bottle of 1000

INTELLECT

5000 in bulk

FLIGHTY

BISCARBONAL, CT, No 47-A

Used as an antacid in dyspepsia and in nauseating stomach conditions accompanied by hyperacidity.

Bismuth Subcarbonate 1/2 gr

Calcium Carbonate 3 1/2 grs

Magnesium Carbonate 2 1/2 grs

Charcoal 2 grs

Dose Two tablets three times a day before meal,

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

REGULATE

INTHRALI

FINCH

BISMUTH-IPECAC-CALOMEL, TT, No 91

Bismuth Subcarbonate

Powdered Ipecac

Sodium Bicarbonate

Calomel

Saccharin

Oil Anise

1 gr

1/50 gr

$\frac{1}{2}$ gr

1/20 gr

1/100 gr

q s

Dose Children, one tablet with water as required

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RLHEARSE

INTRENCH

FLIRT

BOR-OXJEN, VAGINAL DOUCHE, CT, No 62-A

Composed of sodium perborate, sodium borate, zinc sulfate, sodium benzoate, sodium bicarbonate, boric acid, aromatized

For therapeutic details, see page 231

As a Douche Two tablets are dissolved in a quart of warm water

One dozen bottles of 25

Bottle of 100

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

HAVOC

HANGING

RANCH

IMPOUND

KINDRED

Furnished also in powder form See page 232

BROMIDES, HENBANE, CT, No 184

Sodium Bromide

Potassium Bromide

Ammonium Bromide

Po Ext Henbane USP

2½ grs

2½ grs

2½ grs

1/8 gr

Dose As a sedative, 1 or 2 tablets at the evening meal and on retiring

	<i>Code Word</i>
Bottle of 500	RELENT
Bottle of 1000	INTRUST
5000 in bulk	FLOUNCE
See also Triple Bromides	

BUCHU-BORIC-ATROPINE COMPOUND (for Acid Urine), CT, No 95

Po Ext Buchu	1 gr
Atropine Sulfate	1/500 gr
Boric Acid	2 grs
Po Ext Corn Silk	½ gr
Po Ext Hydrangea	½ gr
Potassium Bicarbonate	2 grs
Po Ext Triticum	1 gr

Dose One or 2 tablets with water

	<i>Code Word</i>
Bottle of 500	RELIC
Bottle of 1000	INVADE
5000 in bulk	FLUENT

CALCIUM CARBONATE, CT, No 64-B

Calcium Carbonate	7½ grs
Aromatics	q s

"The ideal antacid," Calcium Carbonate neutralizes gastric acid by the formation of calcium chloride and carbon dioxide. It has distinct advantages over sodium bicarbonate. In the larger doses it probably will coat ulcerated areas and protect them from irritation.

Dose In Hyperacidity Average case 1 tablet every 3 hours or as required. Severe case 2 tablets every 2 hours or as required. It is desirable to push the intake of Calcium Carbonate, an excess of which is harmless. As a source of calcium (in the presence of acid) 1 tablet three times a day. Preferably chewed and swallowed.

	<i>Code Word</i>
Bottle of 500	RELISH
Bottle of 1000	INVASION
5000 in bulk	FLUTE

CALCIUM-CREOSOTE-DICHROMATE, Black, SCT, No 65-A

Encourages bronchial mucous excretion, tends to allay bronchial irritation. A stimulating compound combining the therapy of iodine and creosote

Calcium Creosotate	4 grs
Iodized Calcium	$\frac{1}{2}$ gr
Potassium Dichromate	1/20 gr
Calcium Phosphate	1 gr
<i>Dose</i> One tablet four times a day	<i>Code Word</i>
Bottle of 500	RELIED
Bottle of 1000	INVOKE
5000 in bulk	FLUTTER

CALCIUM LACTATE, 5 grs, CT, No 64-A*Dose*

20 to 30 grains 3 or 4 times a day, taken between meals when the upper intestine is least alkaline. This larger dose than was formerly considered necessary should be supplemented in acute, marked calcium deficiencies by calcium intravenously or intramuscularly

	<i>Code Word</i>
Bottle of 500	REMANT
Bottle of 1000	ISTHMUS
5000 in bulk	FOCUS

CALOMEL (PALATABLE), Pink, also White, TT, No 66

1/10 gr	<i>Code Word</i>
Bottle of 500	REMODEL
Bottle of 1000	ITALIC
5000 in bulk	FOGGY
$\frac{1}{4}$ gr	
Bottle of 500	REMORSE
Bottle of 1000	ITEMIZE
5000 in bulk	FACTS
1 gr	
Bottle of 500	RAGING
Bottle of 1000	IMITATE
5000 in bulk	FREEDOM

Dose

Best given 1/10 to $\frac{1}{4}$ gr every 15 minutes until 2 grs are taken, followed by a saline purge within 2 to 10 hours

CALOMEL AND PHENOLPHTHALEIN (B), Pink, TT, No 161

Calomel	$\frac{1}{2}$ gr
Phenolphthalein	$\frac{1}{2}$ gr
Methyl Salicylate	q s

<i>Dose</i> 1 to 2 tablets	<i>Code Word</i>
Bottle of 500	REMOTF
Bottle of 1000	IMPARI
5000 in bulk	FRETUFI

CALOMEL-SODIUM BICARBONATE, Rx 1, Pink, also White, TT, No. 71

Calomel	1 gr
Sodium Bicarbonate	1 gr

<i>Dose</i> 1 to 2 tablets followed in 2 to 4 hours by saline purge	<i>Code Word</i>
Bottle of 500	RENEGADE
Bottle of 1000	IDENTICAL
5000 in bulk	RIENDLY

CALOMEL-SODIUM BICARBONATE, Rx 4, TT, No 74

Calomel	$\frac{1}{4}$ gr
Sodium Bicarbonate	1 gr

<i>Dose</i> 1 tablet every 30 minutes until 6 are taken, followed in 6 to 10 hours by saline purge	<i>Code Word</i>
Bottle of 500	RENEW
Bottle of 1000	IDIOI
5000 in bulk	FRINGE

CAMPBOR-QUININE-ATROPINE, CCT, No 93

Camphor	$\frac{1}{2}$ gr
Quinine Sulfate	$\frac{1}{2}$ gr
Atropine Sulfate	1/2000 gr

<i>Dose</i> 1 or 2 tablets 4 times a day	<i>Code Word</i>
Bottle of 500	RENOWN
Bottle of 1000	IDOLATRY
5000 in bulk	FROLIC



THE RAT IS CHOSEN FOR MANY EXPERIMENTS BECAUSE HE IS MORE AKIN TO
MAN THAN SOME MIGHT THINK

CAMPHOR-QUININE-BELLADONNA, Rx H, CCT, No 178

Camphor	¼ gr
Quinine Sulfate	¼ gr
Po Ext Belladonna Leaf	1/32 gr

Dose Children, 1 or 2 tablets according to age 4 times a day

Code Word

Bottle of 500	RENOVATE
Bottle of 1000	IDLENESS
5000 in bulk	FRISKLY

CASCARA-NUX-BELLADONNA COMPOUND, No 3,

CCT, No 29

Po Ext Cascara Sagrada	1 gr
Po Ext Nux Vomica	1/10 gr
Po Ext Belladonna Leaf	1/8 gr
Podophyllin	1/8 gr
Powdered Ipecac	1/8 gr

Dose 1 or 2 tablets at bedtime

Code Word

Bottle of 500	RENTAL
Bottle of 1000	IGNITE
5000 in bulk	FROST

CASCARIN-ALOIN-STRYCHNINE-COMPOUND (HINKLE),

Pink or Yellow, SCT, No. 78

Cascarin	¼ gr
Alon	¼ gr
Po Ext Belladonna Leaf	1/8 gr
Oleoresin Ginger	1/16 gr
Strychnine Sulfate	1/60 gr
Podophyllin	1/6 gr

Dose 1 or 2 tablets at bedtime

Code Word

Bottle of 500	REPAIR
Bottle of 1000	IMAGE
5000 in bulk	FRUGAL

CASCARA SAGRADA EXTRACT, 5 grs, CCT, No 79

Dose 1 to 3 tablets

Code Word

Bottle of 500	REPENTANCE
Bottle of 1000	IMPARTIAL
5000 in bulk	FRUIT

CEROCARB (ANTACID), CT, No. 84

Indicated in dyspepsia, nausea and conditions of deficient alkalinity

Cerium Oxalate	½ gr
Calcium Carbonate	3½ grs
Magnesium Carbonate	2½ grs
Oil of Peppermint	q s

Dose One to two tablets before meals or as required*Code Word*

Bottle of 500

REPORTER

Bottle of 1000

IMPLEMENT

5000 in bulk

FUGITIVE

**CEVITAMIC ACID (CRYSTALLINE VITAMIN C), 25 mgs
CT, No. 85**

For therapeutic details, see page 235

Code Word

One bottle of 40

HURRAH

Three bottles of 40

HUSBAND

Six bottles of 40

HUSKY

Twelve bottles of 40

HYFNA

CHOLO-GLYCO, CCT, also SC, Pink, No. 86-A

Bile Salts Compound	1 1/6 gr
Dioscorein	¼ gr
Sodium Succinate	1 gr
Po Ext Cascara Sagrada	1 gr

For therapeutic details, see page 237

Code Word

Half dozen bottles of 100

HOODED

Dozen bottles of 100

HOPEFUL

Bottle of 500

RADISH

Bottle of 1000

IMBIBI

5000 in bulk

KIDNAP

CINC-IOBENZ, CT, No. 88-B

Sodium Cinchophenate	5 grs
Ortho-iodobenzoic Acid	½ gr

A combination adapted to the relief of pain and the reduction of uric acid in rheumatic fever and allied conditions. Sodium cinchophenate is a soluble derivative of phenylcinchoninic acid.

CAUTION Should not be prescribed for those with a tendency to liver dysfunction because of cinchophen's tendency to cause liver necrosis in susceptible persons

Dose One or two tablets 3 or 4 times a day

Code Word

Bottle of 100

HABIT

Bottle of 500

REPRIN I

Bottle of 1000

INCRUST

Enteric Coated, SC, Purple, No 88-E

Bottle of 100

HOARSE

Bottle of 500

REPTIII

Bottle of 1000

INCLUBAI

• **COCAINE HYDROCHLORIDE, $\frac{1}{4}$ gr, HT, No 88-A**

Tube of 20

Box of 5 tubes

Bottle of 100

Powder, $\frac{1}{8}$ -oz vials

Powder, 1-oz vials

• **CODEINE SULFATE, HT**

$\frac{1}{4}$ gr, No 89-4

$\frac{1}{2}$ gr, No 89-2

Tube of 20

Tube of 20

Box of 5 tubes

Box of 5 tubes

Bottle of 100

Bottle of 100

Bottle of 1000

Bottle of 1000

CUBEB COMPOUND, CCT, No 94

Powdered Cubeb

$\frac{3}{4}$ gr

Balsam Copaiba

$\frac{1}{2}$ gr

Ferrous Sulfate, Exsiccated

$\frac{1}{8}$ gr

Venice Turpentine

$\frac{1}{4}$ gr

Oil Santal

q s

Methyl Salicylate

q s

Dose One or 2 tablets

Code Word

Bottle of 500

REPUBLIC

Bottle of 1000

IMPLICATE

5000 in bulk

FULFILL

- Federal narcotic order blank required

DIGITALIS-NITRO COMPOUND, CCT, No 116

Nitroglycerin	1/100 gr
Po Ext Digitalis	1/20 gr
Solid Ex Strophanthus	1/10 gr
Po Ext Belladonna Leaf	1/160 gr
<i>Dose</i> One or 2 tablets as required	<i>Code Word</i>
Bottle of 500	REPUDIATE
Bottle of 1000	IMPOLITE
5000 in bulk	FURLONG

DOUCHE—See Bor-Oxjen Tablets**• DOVER POWDER, 2½ grs, TT, No 103**

<i>Dose</i> 2½ to 10 grs as required	<i>Code Word</i>
Bottle of 100	HAGGARD
Bottle of 1000	IMPOSE

FERROUS CARBONATE MASS, U S P, 5 grs, CCT, No. 53

<i>Dose</i> 45 to 60 grs per day	<i>Code Word</i>
Bottle of 500	RLIAII
Bottle of 1000	INTRIGUI
5000 in bulk	FLORAI

HEXAMETHYLENAMINE—See Methenamine, Meth-atro-mine, and Methena-Phosphate Tablets**IODIZED CALCIUM, 1 gr, CT, No 120****With Charcoal 4/10 gr**

<i>Dose</i> 1 to 5 grains as required	<i>Code Word</i>
Bottle of 500	REPUIST
Bottle of 1000	INCOMF
5000 in bulk	FURLOUGH

- Federal narcotic order blank required

IRON, ARSENIC, AND CALCIUM, Scarlet, SCT, No 121

Combines blood building stimulants with calcium, used especially in the treatment of children with anemia, defective teeth, or retarded growth

Iron, Reduced	4 grs
Potassium Arsenite	1/100 gr
Calcium Phosphate, dibasic	2 grs

Code Word

Bottle of 100	HOGGISH
Half dozen bottles of 100	HUGELY
One dozen bottles of 100	HUMAN
Bottle of 500	RANDOM
Bottle of 1000	INDEBTED
5000 in bulk	KINGDOM

IRON, NUX VOMICA AND ARSENIC, CCT, No. 56

Dose One tablet 3 or 4 times a day

Ferrous Carbonate Mass (U S P)	5 grs
Po Ext Nux Vomica	1/10 gr
Arsenous Acid	1/50 gr

Code Word

Bottle of 500	RELAX
Bottle of 1000	INTRUDE
5000 in bulk	FLOUNDER

IRON, QUININE AND STRYCHNINE ARSENATES, WITH NUCLEINATE, Red or Green, SCT, No 35

Iron Arsenate	1/40 gr
Quinine Arsenate	1/64 gr
Strychnine Arsenate	1/150 gr
Sodium Nucleinate	2/25 gr

Dose One tablet three times a day

Code Word

Bottle of 500	REPUTE
Bottle of 1000	IDEAL
5000 in bulk	FURNACE

LOBIODO, CT, No 43

Po Ext Lobelia	¼ gr
Calcium Iodobehenate (organic iodine)	1½ grs
Potassium Arsenite	1/100 gr
Po Ext Sarsaparilla	1/8 gr

For therapeutic details, see page 254

Code Word

Bottle of 100	HEEDFUL
Bottle of 500	RANGE
Bottle of 1000	IMPRINT

LOBIODRIN, CT, No 128

Po Ext Lobelia	¼ gr
Calcium Iodobehenate (organic iodine)	1½ grs
Ephedrine Hydrochloride	¼ gr
Potassium Arsenite	1/100 gr
Po Ext Sarsaparilla	1/8 gr

For therapeutic details, see page 253

Code Word

Half dozen bottles of 40	HOLIDAY
Dozen bottles of 40	HOMAGE
Bottle of 100	HECTOR
Half dozen bottles of 100	HOSTILE
Dozen bottles of 100	HOSTLER
Bottle of 500	RAGGED
Bottle of 1000	INCIDENT

Furnished also without ephedrine See Lobiodo above

MANGANESE DIOXIDE CAPSULES, 5 grs, No 920

For therapeutic details, see page 254

Code Word

Bottle of 100	FORTUNE
Bottle of 500	QUIVER
Bottle of 1000	JAILER
5000 in bulk	SAPLING

MERCUROUS IODIDE, YELLOW (Mercury Proto-Iodide), $\frac{1}{4}$ grain, TT

Dose $\frac{1}{4}$ to $\frac{1}{2}$ gr 3 times a day

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

REQUISITE

IDENTITY

FUSED

METHENAMINE (HEXAMETHYLENAMINE) CT, 135-A

Methenamine, remains a drug of value in urinary infections with the majority of urologists. Is also useful as a prophylactic to prevent "urethral chill" after passage of urethral instruments

Dose 10 to 15 grains with water 3 times a day

5 grs

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESCUE

IGNORE

FUTILE

$7\frac{1}{2}$ grs

Bottle of 500

Bottle of 1000

5000 in bulk

RESEMBLE

IMBITTER

FATHER

METH-ATRO-MINE with Methylene Blue, Purple, also Gray, SCT, 136-A

Methenamine

$2\frac{1}{2}$ grs

Atropine Sulfate

$1/200$ gr

Hyoscyamine Crystals

$1/200$ gr

Benzoic Acid

$\frac{1}{2}$ gr

Salol

$\frac{1}{2}$ gr

Methylene Blue

$1/10$ gr

The adequate doses of hyoscyamine and atropine have proved this an effective agent in certain urinary irritabilities

Dose One tablet with full glass of water 3 or 4 times a day

Code Word

Half dozen bottles of 100

HOSTESS

Dozen bottles of 100

HOTEL

Bottle of 500

RASCAL

Bottle of 1000

IMMERGE

5000 in bulk

KNEAD

Half Strength, Gray, SCT, 136-C

Contains one-half the amount of each constituent shown above
For the treatment of children and those with a limited tolerance for the drugs

Dose One tablet with full glass of water 3 or 4 times a day

Code Word

Bottle of 500

REALM

Bottle of 1000

INFERNAL

5000 in bulk

KINDLY

METHENA-PHOSPHATE, White, CT, No 136-W

Methenamine

5 grs

Sodium Biphosphate

5 grs

Dose Two tablets with water 3 times a day

Code Word

Bottle of 500

RASHLY

Bottle of 1000

INDIGENT

5000 in bulk

KNIFE

Mottled, CT, No 136-M

Bottle of 500

RATIFY

Bottle of 1000

INDOLENT

5000 in bulk

KNUCKLE

METHYLENE BLUE-CUBEBA COMPOUND, SCT, No 136

Methylene Blue

1 gr

Powdered Cubeba

1 gr

Balsam Copaiba

½ gr

Po Ext Kava Kava

¼ gr

Dose One tablet 3 times a day

Code Word

Bottle of 500

RATIO

Bottle of 1000

INDUSTRY

5000 in bulk

KODAK

• MORPHINE AND ATROPINE, Rx "H", HT, No 143

Morphine Sulfate

¼ gr

Atropine Sulfate

1/150 gr.

Tube of 20

Box of 5 tubes

Bottle of 100

- Federal narcotic order blank required

• MORPHINE SULFATE

$\frac{1}{8}$ gr , HT, 141-8

Tube of 20

Box of 5 tubes

Bottle of 100

Bottle of 1000

$\frac{1}{4}$ gr , HT, No 141-4

Tube of 20

Box of 5 tubes

Bottle of 100

Bottle of 1000

$\frac{1}{2}$ gr , HT, No 141-2

Tube of 20

Box of 5 tubes

Bottle of 100

Bottle of 1000

NITRICHOLATE, Gray, also Green, SCT, No 146-A

Palliation of high blood pressure may be brought about by Nitricholate Tablets through vascular dilation This is prolonged by sympathetic action Sodium nitrite has a more uniform action than other nitrites and the combination of cholagogue tonics assists in removing intestinal products of putrefaction Contraindicated in cerebral hyperemia It is preferable that they be not taken over a long period continuously

Sodium Nitrite	1 gr
Sodium Glycocholate	1/10 gr
Chionanthin	1/10 gr
Irisin	1/24 gr
Po Ext Echinacea	1/25 gr

Dose Two tablets at bedtime

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESIDE

IMMODEST

FORWARD

- Federal narcotic order blank required

PHENOBARBITAL, CT, No 157

While the chief use of phenobarbital is as an antispasmodic and sedative in the mitigation of idiopathic epilepsy, it is also of service in other conditions of nervous and psychic excitability requiring a mild hypnotic or narcotic action. Phenobarbital has a longer period of action than pentobarbital, but less than barbital.

Dose

In epilepsy the usual dose is at first from 1 to 1½ grains, three or four times a day. This may later be reduced, sometimes to ½ grain, once daily. Maitland and Meigant hold that failure is due to insufficient dosage or neglect by the patient. Others give up to 5 grs if required, but only with caution.

As a somnifacient the usual dose is ½ gr followed by a cupful of hot water or milk.

½ gr	<i>Code Word</i>
Bottle of 500	RESOLUTE
Bottle of 1000	IMPEL
5000 in bulk	FOSSIL
1½ gr	
Bottle of 500	RESIST
Bottle of 1000	INDELIBLE
5000 in bulk	FAMOUS

**PHENOLPHTHALEIN (PALATABLE), 1 gr., Pink, TT,
No 160**

<i>Dose</i> 1 to 5 grains	<i>Code Word</i>
Bottle of 500	RESOLVE
Bottle of 1000	INDENT
5000 in bulk	FETCH

PHENOLPHTHALEIN AND CALOMEL

See Calomel and Phenolphthalein

PHENOSUL, Pink, CT, No 162-B

(Combined Cathartic)

Phenolphthalein	½ gr
Magnesium Sulfate, div	10 grs
Gluside	1/100 gr
Methyl Salicylate	q s

Dose

One tablet, masticated and swallowed with a glass of water is sufficient in most cases

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESOUND

IMPETUS

FIDGET

POTASSIUM IODIDE, CT

Dose 2 to 10 grs with water

2 grs, No 170-2

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESPECTFUL

INDIA

FILTER

5 grs, No 170-5

Bottle of 500

Bottle of 1000

5000 in bulk

RESPOND

INDICTED

FINGER

POTASSIUM PERMANGANATE, CT, 5 grs, No 171-5*Dose*

1 tablet dissolved in 11¼ oz of water makes a solution of approximately 1 1000

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESPONSE

INDIGO

FOUNTAIN

SALOL, 5 grs., CT, No 182

Dose 5 grs every 3 hours

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESTLESS

INDULGE

FAINTNESS

SODIUM BICARBONATE, CT

Dose 5 to 10 grs as required

5 grs, No. 187-5

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESTRAIN

INFLATE

FAITH

10 grs, No 187-10

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESTRICT

INFLUENCE

FALSIFY

SODIUM SALICYLATE, 5 grs, White, CT, No 190

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RESUIT

INGRAFI

FAMINL

Dose 5 to 15 grs after meals and at bedtime

Enteric Coated, Green, also Purple, SCT, No 190-E

Designed to avoid stomach disturbances These tablets resist disintegration in an acid solution approximating that of the gastric juices, for more than two hours They are then disintegrated in an alkaline solution similar to the digestive secretions of the intestinal tract, in forty-five minutes or less

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RETIRE

INGRAIN

FAMISHED

STRYCHNINE SULFATE, Red, SCT, No 198

1/60 gr

Bottle of 500

Bottle of 1000

5000 in bulk

Code Word

RETRACT

INHALE

FASTEN

1/30 gr

Bottle of 500

Bottle of 1000

5000 in bulk

RETRENCH

INKLING

FAULTLESS

Dose 1/60 to 1/30 gr 3 times a day

SULFANILAMIDE (p-amino-benzene-sulfonamide), 5 grs, CT, No. 205

For therapeutic details, see page 260

Six bottles of 100
 Twelve bottles of 100
 Bottle of 500
 Bottle of 1000
 5000 bulk

Code Word

HARMONY
 HOPELESS
 REVISAL
 INSULATE
 FEARFUL

THYROID, U S P, CT

For therapeutic details, see page 204

¼ gr, No 211-A

Bottle of 100
 Bottle of 500
 Bottle of 1000

Code Word

HIDDEN
 RETURN
 INLET

½ gr, No 211-B

Bottle of 100
 Bottle of 500
 Bottle of 1000

HIGHLAND
 REVEAL
 INMATE

1 gr, No. 211-C

Bottle of 100
 Bottle of 500
 Bottle of 1000

HIGHWAY
 REVELATION
 INMOST

2 grs, No 211-D

Bottle of 100
 Bottle of 500
 Bottle of 1000

HILLOCK
 REVELRY
 INQUEST

THYTOCIN, CT, No 152

Thyroid Gland, desic
 Phytolaccin
 Apocynin
 Pilocarpine Hydrochloride
 Po Ext Cascara

½ gr
 ½ gr
 1/6 gr
 1/30 gr
 ½ gr

For therapeutic details, see page 262

Code Word

Bottle of 100
 Half dozen bottles of 100
 Dozen bottles of 100
 Bottle of 500
 Bottle of 1000

HARNES
 HOURLY
 HOVEL
 RAINBOW
 IMPEACH

TRIPLE BROMIDES, Rx 1, CT, No 216-A

Sodium Bromide	2½ grs
Potassium Bromide	2½ grs
Ammonium Bromide	2½ grs

Dose

As a sedative, 1 to 4 tablets with water At first given at meals and at bedtime, as insomnia improves at evening meal only

Code Word

Bottle of 500	REVENGE
Bottle of 1000	INSIDE
5000 in bulk	FEASIBLE

TRIPLE BROMIDES, Rx 2, CT, No 217

Sodium Bromide	5 grs
Potassium Bromide	5 grs
Ammonium Bromide	5 grs

Dose 1 or 2 tablets with water

Code Word

Bottle of 500	REVENUE
Bottle of 1000	INSIST
5000 in bulk	FENCING

VITAMIN B-1, 1 mg, CT, No 230

(Crystalline, supplying 300 International Units)

For therapeutic facts, see page 264

Code Word

Three bottles of 40	HUMBLE
Six bottles of 40	HURDLE
Twelve bottles of 40	HUNGER



THIS "TITRATION TABLE" illustrates one of the most generally used chemical control procedures. With it accurate analyses of such chemicals as sodium thiosulfate, sodium iodide, hydrochloric acid, emetine and sodium cacodylate are quickly obtained.

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